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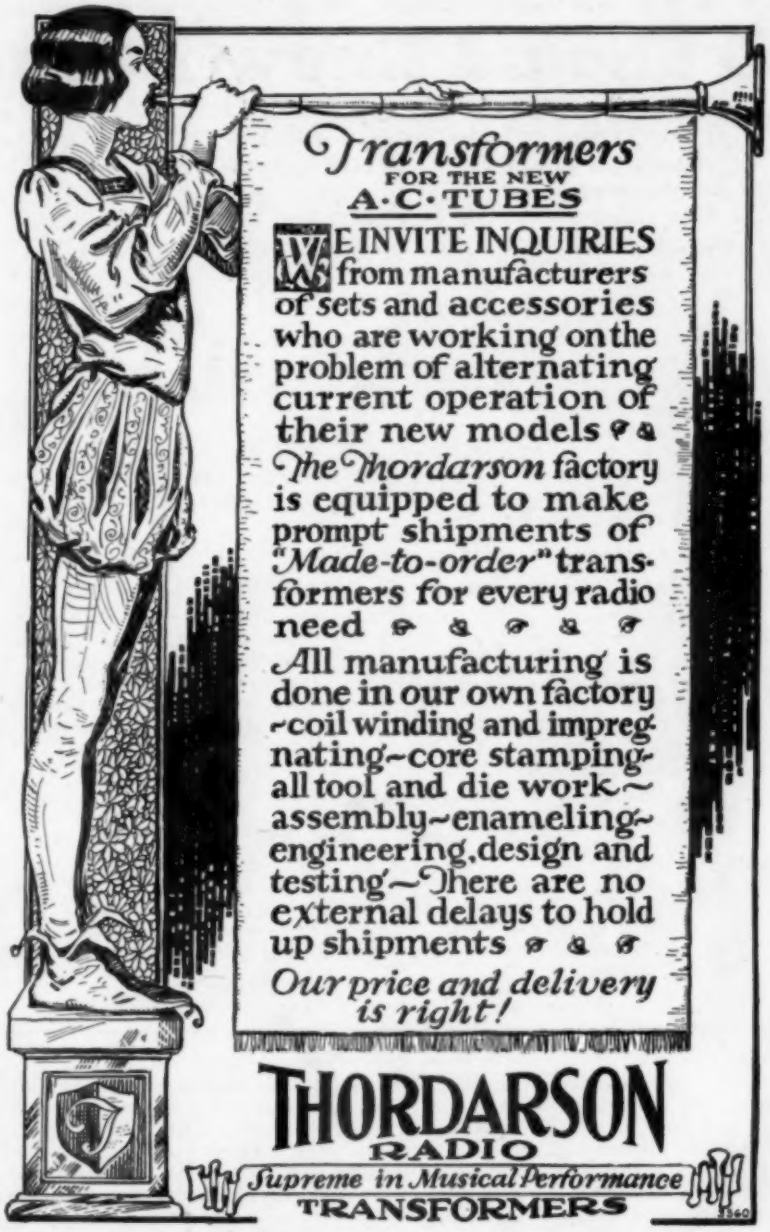

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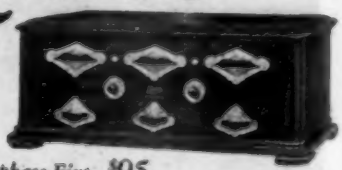

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The Official Organ of the A·R·R·L

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is non-commercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

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EDITORIALS

THE radio world is now focussing its attention upon Washington where in October the International Radiotelegraph Conference will convene for the purpose of revising the London Convention of 1912. Without doubt it will be one of the most important communications conferences ever held and its effects are likely to be far-sweeping on many branches of the art. The governments of the world have prepared for this affair for years and everything concerned with it seems to run to relatively mountainous proportions. It looks like there will be some hundreds of delegates, additional hundreds of advisors, meetings that will certainly last for weeks, and printed matter to be measured only by tons or carloads. The American delegation consists of fourteen eminently-qualified men headed by Secretary of Commerce Hoover, as delegates, plus a staff of twenty technical advisors and an executive staff; and the other delegations are in proportion. The air over the Third District will be blue with radio talk during the month of October!

During 1926 the nations of the world contributed their suggestions for the modification of the London Convention, which were assembled by the International Bureau at Berne into the already famous Book of Proposals. Our Department of State has published a translation of the book in English, which is approximately of the size of a Sears-Roebuck catalog and has made a delicious little bit of light summer reading. (Wottalife!) Of course the bulk of this document is devoted to the fundamental agreements for the establishment and maintenance of international and maritime services. Reporting and discussing these would fill *QST* for twenty years, but they are not questions of immediate interest to our membership. But when it comes to short waves and amateurs—say, fellows, that's a tube of different characteristics! Many and varied are the proposals; a few of them are good, most of them are not; we have space for only the highlights.

Our own government has advanced a plan which, at this early stage of our study of it, seems altogether admirable. In essence it is to confine the treaty to the fundamental international agreements which are the proper concern of governments, and leave all the hokus-pokus of accounting details, procedure, rules for operators, etc., to an agreement between the managements of commercial services whether these be private corporations, as in America, or the states themselves, as in Europe. Then, in the convention itself, the United States proposes a fundamental allocation of all wavelengths, based not upon the detailed nature of the service or upon geographical considerations, but upon the kind of station; that is, whether fixed, mobile, or land. The allocations proposed are those in common use today, particularly in this country. Amateur stations are one of the several varieties of fixed stations. Then, of the bands allocated to fixed stations, the United States proposes that certain portions shall not be assigned to stations handling commercial traffic, and of five bands so specified the lower three are our amateur 20-, 40- and 80-meter bands! How's that for a bit of real backing from our old Uncle Samuel?

Then our government proposes that "The High Contracting Parties reserve their entire liberty with regard to Government or private services other than public international services, provided, however, that such services shall observe, as far as possible, the provisions of the present Convention and Regulations with regard to the measures to be taken to avoid interference . . . . ." In other words, each nation would be free to encourage amateur radio or not, as it saw fit, but under this allocation would have certain wavebands that could be assigned only to fixed stations that were not open to general public correspondence. In addition to these bands certain other fixed-station bands, notably the area from 150 to 200 meters, would also be available to stations of this class, but non-exclusively, which again is in accordance with the American situation.

It is much too early to prophesy whether this plan has a chance of adoption but it is interesting to consider its effect if it is. Its effect would be to put practically all ama-

teur communication within the limits of the present three principal American bands. Now we are accustomed to having most foreign DX amateurs in the region from 30 to 35 meters or around 45 meters and we are likely at first blush to feel that life would be unendurable under a plan that segregated all amateurs in the same bands —that the mutual QRM would spell the end of international amateur radio. Not so! Do we not work from coast to coast thru all varieties of interference without the benefit of having the opposite coast on a quiet band? We can do the same thing internationally. If necessary we could seek the aid of our governments to partition these bands between Europe, North America and "the rest of the world" as in the I.A.R.U. plan. In any event it is quite beyond hope that the Washington conference will assign different bands for amateurs in different continents, as every proposal is based on a division by types or services and in no case is there a proposal for division geographically. Nor should we overlook the ability of our relatively enormous 20-meter band to care for a world of amateur traffic all for itself, and on a frequency excellent for DX. No, we do not believe we would suffer greatly under such a plan; we could overcome its difficulties and it would offer the invaluable benefit of international stabilization and recognition of the amateur bands.

We've been talking above only about the American plan. As is to be expected, unfortunately, no other nation proposes any such splendid protection for its experimenters. Alas, in many cases, the reverse is true! Consider two-by-four Switzerland, for instance, which blandly proposes that "The establishment by individuals . . . . of radiotelegraph communications between several countries exclusively intended for the exchange of private correspondence of interest only to . . . . an individual, is forbidden" and naïvely gives as its reason for this suggestion: "As short waves tend to facilitate the establishment of such communications, one must expect, as has already happened in Switzerland, that administrations will receive applications in this respect". How neat, then, to save administrations this bother by a single simple international agreement! Germany fears that "the right of the state" is frequently violated by private transmitters and suggests that only stations open to public service should be authorized to transmit, or, at the most, only those stations for scientific or technical purposes and "operated by entirely competent persons". Great Britain is a bit more generous and proposes authorizing experimental stations with an input of 10 watts and waves between 150 and 200 meters. "In exceptional cases" the said stations may be authorized to transmit on specified waves outside the 150-200 band and / or with greater power than 10 watts, but no station shall have more than two wavelengths and "emissions from private experimental stations shall be limited to signals necessary for the experiments in progress, and shall not include the communication of any news or other message". Italy is much concerned about the wonderful possibilities of short waves and comes to the conclusion that it is preferable "to reserve the waves below 100 meters for public, military and international commercial services over long distances but excluding special services". The International Broadcasting Union, whoever they are, wish that amateurs be assigned "very low power" and "certain narrow bands of wavelengths . . . that would not be able to offer any further obstacle to the development of broadcasting". And so on, *ad naus.* Incidentally Great Britain wants to foist on the world its dizzy policy, already exemplified in some of its colonies, of recreating all amateur calls to consist of two letters showing the nationality, a digit, and two or three more letters, and then obliging these stations to use *de* as an intermediate. For no good reason Great Britain has steadfastly opposed the use by its amateurs of the I.A.R.U. intermediates, the only government in the world so to honor the I.A.R.U.

Well, there is going to be lots to talk about. American amateurs can be proud that the government of this land, the home of amateur radio, has proposed a decent and workmanlike basis for providing amateur privileges. Our Department of State has invited both the A.R.R.L. and the I.A.R.U. to have representatives present during the conference, and we shall be represented. More important, the American delegation has divided itself into committees which are now holding hearings in preparation for the conference, and the League is embracing an invitation to send representatives before the delegation to comment on the Book of Proposals. Comment will not be difficult but it may not be particularly necessary, for indications already exist that the American delegation will be the amateur's strongest friend when the conference meets. At any rate we're on our way!

K. B. W.

Following the Sun With a Radio Flivver

By F. Johnson Elser, op3AA and xop1ZA

AFTER I had been operating op3AA for the first four months of 1926, I received an offer from the Philippine Government to conduct the radio class it was then opening at the Trade School in Manila. My acceptance of this offer meant I was to be away from 3AA practically all of the time for the next ten months, without any short-wave radio station. In July, however, having purchased a Ford coupe, I was struck with the idea of building a permanent short-wave station on the same. After four months' work and several changes in my original plans I finally had what I considered a satisfactory layout.

When building a portable station of this type, the two most important considerations are the radiating system and the power supply. In my auto set, I gave consideration to the following types of radiating systems:

1. Some sort of wire strung from the car to an outside support.
2. Self-supporting rod acting as vertical antenna.
3. Loop.

I chose the second. A loop antenna has the advantage of not having to be set up for each transmission and it can be used when the car is in motion (except that it is almost impossible to receive through the ignition QRM) but it cannot be made large enough to give effective radiation without sticking out of the car in a dangerous way.[1] The wire antenna may give effective radiation but is difficult to set up, does not always have the same fundamental, and supports cannot always be found readily. The rod antenna is a compromise between the two. It can be put up or taken down (in my case) in thirty seconds, needs no external supports, always has the same fundamental, and is a fairly efficient radiator. I use the frame of the car as a counterpoise, since it is already insulated from the ground. Looking at the photos you will see that the antenna, which consists of six three-foot pieces of half-inch brass tubing with friction couplings, is supported at the rear end of the car by an iron bracket. The lower end of the antenna is threaded to screw into a porcelain "Mogul" or "Jumbo" lamp socket which is carried below the rear bumper. From the socket a piece of heavily-insulated ignition cable, well taped, runs under the car in the most direct line to the change-over switch. Four feet above the porcelain socket is a bakelite bushing supported by an iron bracket bolted to the car behind the tire carrier. All parts of the antenna must be well insulated on a set of this kind. My antenna has a fundamental to the frame of slightly over thirty meters.

For power supply we also have three major possibilities:

1. Spark coil.
2. Battery and dynamotor.
3. "B" batteries.

The first is the simplest and cheapest possibility and is the one that I tried first. The disadvantages are that it gives low power and the voltage is too high for the ordinary tube and is not constant. I worked with spark coils for two months but was never able to get really satisfactory operation from them. The third possibility is rather expensive, the batteries take up quite a bit of room, must be replaced frequently and probably would be injured by the jolting of the car.

THE AUTHOR ERECTING THE MAST ON xop1ZA

Early in December, 1926, after some effort, I was fortunate enough to secure a 10- to 300-volt dynamotor, mounted it in the rear compartment of the coupe, and also installed another 6-volt 80-A. H. storage battery. Switches were provided for connecting the batteries in series for operation or

1. Two articles of interest to "flivver radio" enthusiasts which have appeared in past *QST*s may be found in the July, '25 number on page 33, and on page 36 of the November, '26 issue.—Ed

singly to the car generator for charging. With this arrangement I was finally able to put .6 amps. in the antenna at 38 meters.

The transmitter and receiver on an auto need be no different from those in any

READY TO OPERATE. THE AUTHOR AND HIS RADIO FLIVVER AT ROME

short-wave station save that they must be built to fit the space available and to withstand the constant shocks and vibration. Any circuit may be used. In this as in any other set, use the circuit with which you are most familiar. I used the inductively-coupled Hartley. The primary is screwed fast to a "breadboard" while the antenna coil can be locked at any coupling from 1 to 7 inches. Two .0001μfd. variable condensers with vernier dials are used, in parallel with the plate coil and in series with the antenna coil, respectively, the vernier dials locking the condensers at the positions used. One "5"-watter is used with parallel feed, without grid condenser or leak. A .0005 blocking condenser is used. All taps on the primary inductance, except the plate tap, are variable. The antenna coil has 5 turns and the primary coil 10 (from R. C. A. helix). The r.f. choke is wound on a metal-ended glass toothbrush tube supported by 60 amp. fuse clips. No meters are used. The whole transmitter is mounted on a narrow board supported at each end by iron brackets and located in the back compartment of the coupe. Rubber bath sponges serve to soften road shocks and lessen vibration.

The receiver, key, and switches are all mounted on the shelf back of the driver's seat. The receiver is about four inches above the shelf to make tuning easier, so there is room underneath for a 67-volt "B" battery and a 3-volt "C" battery. Filaments are supplied from the car battery, of course. There is nothing unusual about the receiver except its narrowness, as it uses the good old "loose coupler with tickler" system that worked so well at 3AA. There are two stages of 1000-cycle tuned audio amplification and a pair of Baldies; also a dust cover made of top material. The combination of short antenna and tuned amplification cuts down static and power leaks to an amazing degree.

After installing the dynamotor, I was surprised to work op3AB (100 mi.), JKZB (1000 mi.) and nu6FR (about 7000 mi.) on the night of Dec. 11, 1926. The latter reported me R5, steady and easy to read, and we held a half-hour rag chew without a single repeat! I later received a confirmation card from Fresno. During the early months of this year I had a great deal of pleasure and gained some information by using the set on trips made out into little-travelled regions, once taking it over a narrow and dangerous road up into the old headhunting country of Luzon, over eight-thousand feet above sea level, from which point it worked perfectly.

Last March 18th, my mother and I departed from the Philippines aboard KDHF bound for Naples Italy, with the radio flivver (xop1ZA) on board. (Get out the atlas now, OM!) On March 22nd we pulled into Singapore, a hairsbreadth above the Equator, and the first thing I did was look up vs1AB (ex-ss2SE) Robert E. Earle, whom I had worked from 3AA. He seemed pleased to see me and invited me to dinner. After a real meal at the delightful Earle home, where I met Mrs. Earle and the Jr. opr., we naturally repaired to the shack, whence I had the pleasure of working nu6AMM and op1BD. You will see OM Earle and his receiver in an accompanying photo. He has a fine 40-meter set and, when not QRW running the city electric plant, is striving with 20 meters. Singapore is a very interesting city and 1AB is always ready to tell you about it. While I was there the "Franconia" arrived on a world cruise and 1AB managed to get us passed to the radio room, where I had a glimpse of an up-to-date British commercial station and a sixty-meter broadcast receiver put on the ship by Westinghouse in an effort to see how KDKA was getting out on that wave.

I was very sorry to leave Singapore, but 1AB gave me a card to his acquaintance vs1AC (ex-ss3SE) who lived at our next stop, Penang. This is an island somewhat north of Singapore "on the road to Mandalay" and the city is George Town. Not being able to get in phase with 1AC, I had a talk with him over the phone, during which he asked me to give the A.R.R.L. his 73. His name and address are M. J. Thorpe, 1 Park Road, George Town, Penang, Straits Settlements. After an auto trip around the island while the ship was loading tin and rubber I put the 1ZA short-wave receiver in the ship's operating room by kind permission of the chief operator.

Our next port was Colombo, Island of Ceylon, just south of India. This was a four-day run and each night I was able to copy the home news from op3AA and 3AB, sent by the latter.

We only had a day's stop at Ceylon, far too little to do justice to the wonderful sightseeing the island affords. I might mention the pungent cinnamon gardens; the beautiful beach and tea garden at Mount Lavinia, rendezvous of Ceylonese society; and the unique snake temple, where live cobras are used as ornaments for statues, entirely at liberty to do as they please. Fortunately for visitors, however, the snakes seem to be sluggish (probably doped) and do no more than open their mouths, exhibit rather wicked-looking fangs, and attempt a hiss, usually ending up as a yawn. I discovered that the most active amateur on Ceylon is G. H. Jolliffe, care Frocester Estate, Neboda, who has a transmitter operating from 38-42 meters, call 7VX. He happened to be in Colombo the day I was there so I missed him by a matter of minutes.

After leaving Colombo we had a twelve days' trip to Suez, Egypt, through the Indian Ocean and Red Sea. Although the induction from the electric fans on the ship made reception difficult, I managed to drag in the sigs of a number of European amateur and American naval and commercial stations during this run. On April 11th we arrived at Suez, and leaving 1ZA to go through the canal to Alexandria, I motored over the desert to Cairo. The latter is a thoroughly modern city with wide, well-paved streets, a large airport connecting with every capital in Europe, and an excellent street-car system, but still has many old things mixed with the new. Chief among the former are the Great Pyramids at Gizeh, a suberb of Cairo; the Museum; and the Alabaster Mosque. Climbing to the top of the largest pyramid, I found it now quite flat making an excellent location for an antenna as it is several hundred feet above the desert. I was told that radio transmission of any kind is strictly forbidden by the Egyptian Government, but reception on any wave is freely allowed. Before leaving Cairo I naturally viewed the treasures taken from King Tutankhamen's tomb, which must actually be seen to be trully appreciated. (No radio apparatus was found in the tomb.)

Rejoining the ship at Alexandria, we had a smooth three-day run to Naples, Italy, where, after saying goodbye to KDHF, I turned to the task of making 1ZA ready for the northern trip. I was sorry to find that one storage battery had gone dead during the sea trip, since that meant cranking the car by hand and no radio until I could secure a new one. After making trips to Vesuvius, Pompeii, Sorrento and Amalfi in the car over the terrible Neapolitan roads, we turned northward and arrived at Rome on April 22nd. One of the first things I did there was to look up ei1GW, whom I had worked from op3AA. He seemed delighted to see me and brought his friend ei1DO, editor of "Radiofonia," with him. The combination of 1DO's surprisingly good English, my rather poor understanding of Italian, and a few international abbreviations, brought us to a common understanding and soon I was working su2AK from 1GW's efficient station. Shortly after, I visited 1DO who uses the same tube, batteries and antenna for both transmitting and receiving. He had just received a report from Australia of R3 when he was using an input of 2 watts, which he confirmed. Both DO and GW were naturally very much interested in 1ZA and so, after securing a new battery. I set up the station in a Roman park, and, after taking

ROBERT E. EARLE, am-vs1AB, ex-ss2SE, SINGAPORE

the photos you see here, worked ef8IF who reported my sigs R8 at 10 a.m. 1ZA was using two UX-201-A's with an input of 10 watts.

That same morning I motored up to Siena over the pass of Radicofani, enroute to Florence.

Soon after arriving in Florence, one of the garage mechanics pointed to the apparatus on the car. "What is that?" he inquired.

"A radio transmitter," I thoughtlessly replied, and attempted to explain it to him.

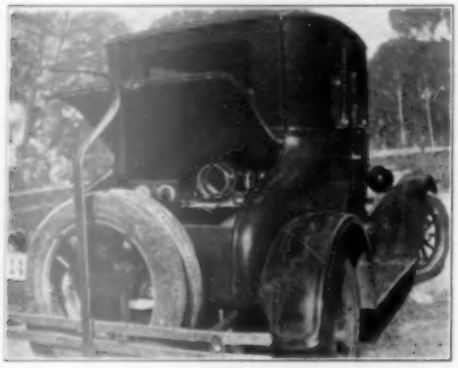
Next morning, however, a plain-clothes detective slapped me on the shoulder and said, "You are wanted at the police station."

"Four months on bread and water," I thought as I silently chauffered him to the station. However, after proving who I was, where I came from, and that I had no serious intentions of starting a reign of terror in Italy, the police declared themselves satisfied, and released me. "Fine," I said, "now can I transmit?"

"Oh, no," they replied, "that's something

you must take up with the militia; we have no authority concerning such matters."

The militia soon referred me to the Army and during the next two or three days I moved up the line, from Lieutenant to Captain, to Major, to Colonel of Signal Corps, all of them evincing extreme interest in 1ZA but refusing to commit themselves, finally laying the matter before the Commanding General. At last, two days before my departure, the latter announced that he



A REAR VIEW OF xop1ZA WHILE AT ROME, SHOWING THE LOCATION OF THE TRANSMITTER

could not himself grant me permission to operate the station, but must refer the matter to the Minister of Communications at Rome. As a special favor he would, however, telegraph my request. Just before I left, I learned that the Minister had telegraphed a request for additional information on my activities. (Perhaps the M. of C. wanted to pass the buck to Mussolini. Hi!) After this episode, I was careful to explain that the suspicious looking apparatus was in reality a "newly-invented pretzel-bender," a statement hardly fair to make to one not speaking English fluently, but, nevertheless, highly effective.

I next had a long run over the Passa della Futa to Piacenza. I looked up 1AY at the latter city as he had communicated with me at 3AA. His well-arranged station (described in a recent issue of "Radio Giornale") is one of the best I saw in Italy.

Next day, a short run through Pavia to Milan. Here I found 1ER, Engineer Santangeli, whose wonderful work is already well known to League members. I was particularly impressed with his 5-meter Mesny sets, with his voluminous and complete log, which sets a mark for every ham to strive for, and his activity in amateur work. Although at that time he was very much occupied with the installation of a Western Electric 5-kw. transmitter at Como, in preparation for the centenary of Alessandro Volta, who was born there. 1ER told me something about radio regulations in Italy, and I understand that only since a year ago has anyone in Italy been allowed to possess radio equipment. No permits have been issued for transmitting, so I understood, and it would therefore appear that all "ei" hams are working more or less "under cover." After viewing the lace-like cathedral at Milan, Leonardo da Vinci's renowened "Last Supper," and the Italian Lakes, I left Italy on May 9th, loading 1ZA on a flat car to go through the longest tunnel in the world, as the Simplon was still too full of snow to allow passage of motor cars over it.

Arriving at Brigue, the other end of the tunnel, I found myself in Switzerland. Passing down the Swiss "Valais" leisurely via Sierre, Sion and Martigny, in a few days I arrived at Montreux on the shores of Lake Geneva. Here I did a little Alpine climbing and also visited the castle of Chillon at the head of the lake.

Next day (May 14th) I passed along the north shore of the lake and arrived at Geneva, famous for its international conferences. That evening I set up 1ZA outside the town and was happy to QSO en0HB and ei1DR, who gave me R5 and R8, respectively. Next, I went from Geneva across the border to Dijon, France, home of ef8BF; quite a long trip. 8BF, Pierre Louis, the president of the R. E. F. and whom I had formerly QSO'd from 3AA, welcomed me effusively and we had a real ham-fest, ending by my staying up half the night, working nu3PF on 20 meters, and trying to operate 1ZA, whose transmitter had gone dead. When you go to France be sure not to miss Dijon. It is an unusually interesting town and will also appeal to some as being the center of the French fine-wine district. 8BF exacted a promise from me to attend the annual R.E.F. dinner at Paris, which was then about due.

Passing the old royal hunting lodge of Fontainebleu I arrived at Melun, near Paris, and called on 8JN, whom I had also QSO'd from 3AA. His up-to-date remote-control station is one of the most advanced in France, but unfortunately (for us) he is not doing much brasspounding at present as 5 meters claims all his attention. He is making extensive tests with several French stations, principally 8BF, Arriving at Paris, May 18th, I put 1ZA in the garage for a little greasing and proceeded to indulge in some sight-seeing.

The R. E. F. dinner was quite an affair, having an attendance of 55 and including such famous radio men as Dr. Mesny, ef8BF, ef8JN, ef8AB, ef8FMR, ef8MUL, Mr. Mezger of ef8GO, ef8DQA, ef8CA, ef8FT, yDCR, nu1RD, eg5KU and eg5AD. Everybody had a look at 1ZA and a pleasant word for me. I am sure you must all feel the French spirit of cordiality even

while communicating by telegraphy! The event of the evening was the exhibition of 8JN's 5-meter sets, and a guessing contest involving the wavelength of a midget transmitter was also held. At the end of the dinner, ef8DQA, eg5AD and eg5KU took a run to the outskirts of Paris with me and tried all night to raise some stations from 1ZA. We finally discovered that the tube filaments were deactivated, and not having any replacements, were forced to QRT.

Two days later I left Paris, arriving at Le Havre, after a day's run. That night I loaded 1ZA on a Channel steamer and astounded the oldtime Marconi brass-pounder on board by copying DX stations with only two feet of antenna sticking out of the hold. Arriving at Southampton next morning, I reached London that night. One of the first things I did was to look up eg5AD and 5KU. They both have efficient stations, about 100 watts input, a little haywire, but certainly delivering "the goods." 5AD's is crystal controlled and puts out a beautiful signal, as many of you doubtless already know. These two admirable gentlemen went entirely over 1ZA with me, assisted me in tuning it and found me two new tubes I could use! I shortly had the pleasure of working eb4CK, ek4JL, eg6IA and eb4CO from 1ZA.

On May 28th, I left London for Edinburgh, maintaining schedules with 5KU enroute and passing via Stratford-on-Avon, Newark-on-Trent, Newcastle-on-Tyne and Dunbar. After four days in Edinburgh I made a short trip to Perth. I then turned South to Liverpool, leaving the latter city on the "Celtic" June 4th, after spending seven weeks and covering about 3000 miles in Europe.

The trip across the Atlantic passed without incident and I arrived at Boston, June 12th, three months after leaving Manila and after covering a total distance of nearly 14,000 nautical miles.

I strongly advise anyone planning a trip to equip himself with a portable set and look up the amateurs wherever he may go. I will guarantee that he has a better time than anybody else has. I know that I did.

The Reason Why

By Hiram Percy Maxim, President A.R.R.L.

Sitting back in the old arm chair, with the last issue of *QST* read from cover to cover and with everybody else in the house asleep hours ago, I fell to thinking of amateur radio today and amateur radio of other days. As the blue smoke curls slowly upward from the old pipe, visions of early A.R.R.L. Directors' Meetings float before me. I see those old timers grappling with problems of organization, with QRM, with trunk line traffic and rival amateur leagues. I see sinister commercial and government interests at work seeking to exterminate amateur radio. They were dark days, those early ones.

Today I see Amateur Radio an institution, recognized by our American government and on the road to recognition by the other governments of the world. I see a fine, loyal A.R.R.L. membership of 20,000 standing shoulder to shoulder and believing in each other and still blazing the way in radio communication. I see a rapidly developing world-wide amateur radio brotherhood taking shape, in the form of our I.A.R.U.

And as the last embers of the old pipe turn to grey ash, I ask how it all came about; that the A.R.R.L. should have succeeded and all its opponents failed. The answer is clear. It is because with our opponents there was always some kind of a selfish motive to be served for someone, whereas in our A.R.R.L. we insisted from the beginning that no selfish motive for anybody or anything should ever prevail. Everything that A.R.R.L. undertakes must be 100% for the general good. That policy bred loyalty and confidence. With those two things an organization can prosper forever.

A Harmonic Method of Increasing Selectivity

By David Grimes*

SELECTIVITY has already become a vital problem in the broadcast- and long-wave field and as the art develops, increasing congestion in other bands is bound to make the subject important for all radio reception.

It was with this in mind that we set about a systematic study here in the laboratory. If "real selectivity" (whatever that is) were such a panacea for most of the broadcast ills as we had been told, we were all for it. Tests were conducted on most of the well known forms of receiving circuits of the regenerative, tuned radio frequency amplifier and superheterodyne varieties. Tables of different classes of assets and liabilities were compiled so that intelligent comparison might be made. These tables as a whole need not be given here but certain points as to the different types of receivers are of importance in what follows.

The regenerative receiver, as is well known, operates by means of "negative resistance", feed back, or "reinforcement". The regenerative circuits have always been excellent as to sensitivity but the selectivity is not sufficient for modern conditions. This can be explained by considering that such receivers usually employ but one tuned circuit and also that the "negative resistance" property is present only at that particular frequency for which the receiver is tuned. For carrier waves somewhat off the tuned frequency the regenerative effect is unable to assist the "natural" sharpness of the circuit.

Tuned radio frequency systems provide an improvement in selectivity over the regenerative receivers by cascading the selectivity of successive tuned circuits. This selectivity at times fails when a strong signal is received from a nearby station at the same time that the receiver is tuned to a distant station not far from the same wavelength. This is occasioned by a modulation of the weaker signal by the stronger signals which latter cannot be prevented ordinarily from entering the system to some degree. Improvement is made by the use of higher plate voltage (90) and higher grid bias in the radio amplifier tubes. Even so, the plate resistances decrease the sharpness in tuning of the various circuits which has led to the combination of regeneration with T.R.F. so that some "negative resistance" may be applied. Several such combinations were devised during this investigation and they were really selective. When tested in the broadcast band, distant stations could be separated from powerful local stations within 10 kilocycles of the distant stations. Unfortunately, all of these circuits had a common characteristic; the audio side bands had been considerably damaged so that the absence of high tones in the musical cases was decidedly noticeable. The R.G.S. inverse duplex receiver described in the January and February issues of *QST* compensated for such cutting of sidebands by employing an audio amplifying system that possessed a rising characteristic at the high pitches.

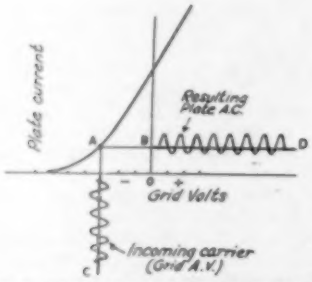


FIG. 1. THE PRINCIPLE OF THE SECOND HARMONIC GENERATOR

The sinusoidal incoming carrier shown along the axis AC operates the grid along the curved part of the grid voltage—plate current curve, thereby producing in the plate circuit a distorted wave which is shown in the drawing along the axis BD and which contains a strong component of second harmonic on which the principle of operation depends. This is more fully explained in the text and by equation 2.

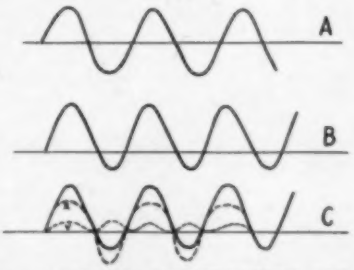


FIG. 2. GRAPHIC ILLUSTRATION OF THE PRINCIPLE STATED IN FIG. 1 AND EQUATION 2

A is a sine wave such as for instance the received carrier of Fig. 1. B is a deformed wave such as the plate current curve of Fig. 1. C shows the analysis of B into into a sine wave X of the same nature as A and a double frequency wave Y.

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In the superheterodyne a somewhat similar difficulty is encountered. Much of the selectivity of the superheterodyne is obtained in the intermediate frequency stages and these are generally designed to pass a lower frequency carrier wave. At these low frequencies if the stages are made at all sharp the modulation side bands suffer terribly since plus or minus 5,000 cycles (the minimum territory occupied by the side band) is a larger percentage of a 30,000-cycle carrier than of (for instance)

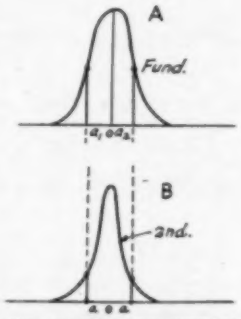


FIG. 3. SECOND HARMONIC RESONANCE COMPARED WITH FUNDAMENTAL RESONANCE

Curve A shows an ordinary resonance curve for the fundamental, the points a1 and a2 being so chosen that the curve is half as high at those points as it is at the maximum. Since the strength of the second harmonic is proportional to the square of the voltage a drop of one half in the height of the fundamental resonance curve causes the second harmonic generated to drop to one fourth of its former value. The practical effect of this is very sharp resonance.

a 500,000-cycle carrier as originally received. Thus, to avoid cutting side bands with a 30-kilocycle amplifier one would need tuned stages the top of whose resonance curve to be at least 10,000 cycles wide which is impossible if any selectivity is to be supplied by the intermediate amplifier. This difficulty has lead to the design of superheterodynes in which the intermediate frequency has been made higher than the received frequency. These in turn encounter extreme difficulty in obtaining satisfactory amplification at high carrier frequencies. The tendency is therefore to lose sensitivity while gaining selectivity and "tone quality", where the reception of music is being considered.

All of this brings us back to the subject of the investigation; to obtain selectivity without one of the various compensating disadvantages that have been mentioned. If one considers the broadcast field alone this can be restated as the desire for good selectivity without the cutting of side bands. By the method about to be described this thing can be done by an arrangement in which the characteristic of the vacuum tube is used rather than any circuit combination. It seems rather humorous to set out to obtain selectivity by a new circuit arrangement and to end up with the desired effect but without a circuit!

THE "OCTA-MONIC" PRINCIPLE

It is well known that the plate current-grid voltage curve of a vacuum tube is not a straight line which means that equal plus and minus changes in grid potential will not result in equal changes in plate current. As far as amplification is concerned this is distortion and the effect is minimized in amplifier design. On the other hand it is this same crooked characteristic that makes the vacuum tube so valuable as an oscillator and modulator.

In the receiving arrangement to be described the crooked characteristic of the vacuum tube is deliberately made to distort the carrier wave (not the audio modulation) so that there will be present in the tube output a maximum amount of the second harmonic of the carrier wave, this second harmonic also carrying the audio modulation. For this purpose the tube is operated on the lower knee of the curve as shown in Fig. 1. In order to operate at this point a grid bias is required which is represented by the distance AB. In the figure a carrier of sinusoidal form is being fed to the grid and is represented by the oscillation about the axis AC. This sinusodial voltage has the form

$$e = \sin p\ t \quad \text{(eg. 1)}$$

This voltage alternately increases and decreases the grid voltage above and below the permanent grid bias as shown on the axis BD. The latter curve is a complex function due to the fact that the positive half of the generative wave is larger than the negative half. Van Der Biil (Thermionic Vacuum Tube and Its Application) represents this plate current as

$$I_p = \alpha\left(\frac{E_p}{\mu} + E_g + \varepsilon\right)^2 + 2\alpha\left(\frac{E_p}{\mu} + E_g + \varepsilon\right) e \sin pt + \frac{\alpha e^2}{2} \cos\left(2pt + \pi\right) + \frac{\alpha e^2}{2} \quad \text{(eg-2)}$$

The formula as given carries the problem only as far as the second harmonic since the energy in higher harmonics is very small. The first member on the right hand side of the equation represents the steady direct current which is maintained when there is no input to the tube (alternating grid voltage e is then zero) and is the value about which the plate current varies for small values of e. The second member of the equation defines the alternating output

current phases with the input voltage and represents the useful energy when the tube is employed as an amplifier. The third term defines the second harmonic output which is at twice the frequency of the grid input voltage e sine p t and its amplitude is proportionally to the *square* of the input voltage e. This latter fact is the basis of the scheme of selectivity which has been named "Octa-monic". The fourth and last term of the equation represents the change in the direct current component and is the useful term when the tube is employed as a detector. In the customary receiver designs it will be seen that there are employed the other terms of the equation with the harmonic one surpressed as much as possible. In the scheme under consideration this term is deliberately employed for selectivity purposes.

By the methods of Fourier it can be shown that a complex continuous wave is merely the result of the algebraic addition of one or more simple sine waves of various frequencies, amplitudes and phase relations. Fourier's theorem formulates this and may be stated briefly in this wise: If we have any single-valued periodic curve (that is one having only one value of the ordinate for any one value of the abscissa and repeating itself regularly) then it is always possible to reproduce this curve exactly by adding suitable sine curves having wavelengths which are in integer relation to each other, provided always that the original curve is not discontinuous.

As a simple illustration of this Fig. 2A shows a pure sine wave curve. 2B shows a distorted wave where the positive halves

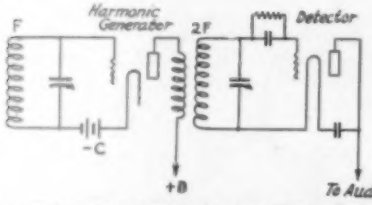


FIG. 4. CIRCUIT ARRANGEMENT BY WHICH THE SECOND HARMONIC RESONANCE EFFECT OF FIG. 3 IS UTILIZED

are larger than the negative halves. This is just the condition obtained in the tube plate circuit when operated as shown in Fig. 1. Fig. 2C shows how this curve can be resolved into a pure sine wave of the fundamental frequency plus a smaller sine wave of the double frequency which is the same thing that was stated mathematically in equation 2. Applying this equation to Fig. 2C, the curve X is the distorted output wave made up of the curve Y which is the fundamental represented by the second member on the right of equation 2 and the curve Z is the double frequency wave represented by the third member on the right side of the equation.

Having created the second harmonic it remains to show why increased selectivity is obtained partly as a direct result of this creation and partly by the utilization of effects which become available in consequence of this creation. As already shown the generation of the second harmonic is proportional to the square of the input voltage e.

Second harmonic is proportional to $\frac{e^2}{2}$ (eg. 3)

Fig. 3A shows the familiar resonance curve of a simple tuned circuit working into the grid-filament of the harmonic generator tube. Fig. 4 shows the circuit under discussion. The grid is tuned to

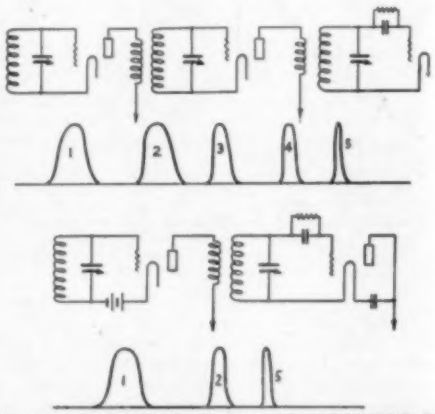


FIG. 5. CURVES INDICATING PROGRESSIVE INCREASE IN SHARPNESS OF TUNING AS A SIGNAL IS PASSED THROUGH AN ORDINARY RADIO FREQUENCY AMPLIFIER SYSTEM AND AN "OCTA-MONIC" SYSTEM

The resonance curves are drawn to show sharpness of resonance only and ignore the magnitude of currents and voltages involved. Note that the same final sharpness is obtained with fewer tuned circuits in the "Octa-monic".

some station's carrier frequency in (for instance) the broadcast band and the plate is tuned to the second harmonic of that frequency, in other words to double that frequency. If now the incoming signal is varied *off* the resonance frequency to some percentage such as represented by a_1 or a_2 in Fig. 3A the response of the tuned circuit is diminished and the voltage on the grid is therefore also diminished. Suppose that for convenience we make this percentage of detuning such that the voltage on the *grid* has dropped to one half of the maximum value. Meanwhile the second

harmonic current generated in the *plate* circuit of the harmonic generator (being proportional to the square of the input voltage) has dropped to *one fourth* of the resonance maximum value. As a result the second harmonic resonance curve resulting is such as represented by Fig. 3B.

INCREASED SELECTIVITY

In order to convey some impression as to the relative increase in selectivity which this effect gives over cascaded radio amplifier stages tuned in the common manner, reference is made to Fig. 5. Fig. 5A shows a standard two stage tuned radio frequency amplifier circuit with corresponding reso-

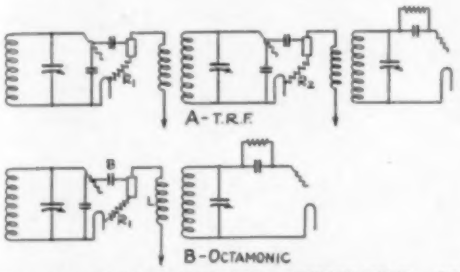


FIG. 6. PLATE CIRCUIT RESISTANCE AS AFFECTING THE NEXT TUNED CIRCUIT IN THE REGULAR SYSTEM OF CASCADED TUNED CIRCUITS A

The plate circuit reactance is high at the working frequency and the plate resistance is not as effectively by-passed by the tube capacities as is the case in the system B, where the by-pass effect is twice as great.

nance curves below each section of the circuit. Still referring to Fig. 5A curve, No. 1 is the resonance of the first tuned grid circuit. The fundamental currents flowing in the plate circuit follow the same *shape* of curve and are represented by curve 2. We are concerned here with sharpness of resonance and in order to make the point clearer and also to avoid impossible scales in the drawing the curve 2 is shown of the same maximum height as curve 1, although the energy in the plate circuit is manifestly greater. Curve 3 is somewhat sharper because of the characteristic of the second tuned circuit. Curve 4 is of the same shape as curve 3 as the amplifier currents in the plate are directly proportional to the first power of the grid voltages. Again the plate curve is drawn of the same height as the grid curve for the reason stated before. Curve 5 is still sharper because of the operation of the third tuned circuit.

Now compare this with Fig. 5B which shows an "Octa-monic" system with the resonance curves just below the various sections of the circuit. Curve 1 represents the sharpness of tuning in the first tuned grid circuit. Curve 2 represents the generated second harmonic in the plate circuit. Curve 3 is sharper than curve 2 because of the action of the second tuned circuit. Curve 3 in this system and curve 5 in the system of 5A are shown as having the same sharpness of resonance. Actually, curve 3 in the "Octa-monic" system is sharper, probably because of the comparative absence of plate resistances in the harmonic circuits as compared with two plate resistances in the usual radio frequency amplifier systems. This point is suggested by Fig. 6A which shows schematically the two plate resistances R_1 and R_2 which tend to broaden the tuned circuits to which they are coupled. The interelement capacities in the tube tend to bypass the plate resistance. The effect is important at the broadcast frequencies. Fig. 6B shows the "Octa-monic" condition relative to these plate resistances. Here there is only one plate resistance to consider and this has become less harmful because it is somewhat more effectively by-passed by the tube capacities at the second harmonic frequency and also because the tuned circuit connected to the plate directly and by coupling is a second harmonic circuit and accordingly has a reactance tending to minimize the effect.

Incidentally, the plate circuit of the harmonic generator presents an interesting problem. Obviously, currents of both fundamental and second harmonic frequency exist in this circuit. The plate circuit is tuned to the second harmonic frequency. The reactance curve for the plate circuit therefore appears somewhat as shown in Fig. 7. It can be seen that the fundamental frequency F appears on the inductive portion of the curve and that

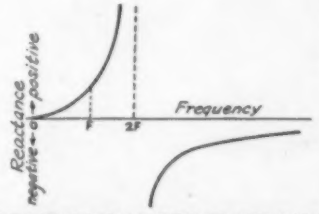


FIG. 7. REACTANCE OF THE PLATE CIRCUIT OF THE HARMONIC GENERATING TUBE AT THE FUNDAMENTAL FREQUENCY F AND THE HARMONIC FREQUENCY 2F

The reactance at F is inductive and efficient to add some regenerative gain while at 2F the reactance is equivalent to a high resistance. Since exact resonance is seldom secured in practise and in any case is possible only for the carrier and not for the side bands these conditions are approximated.

therefore the harmonic generator is somewhat regenerative in its action at the fundamental frequency, somewhat increasing the sensitivity of the system. This is not "regeneration" in the usual sense since it is

an incidental effect inherent in the system and adjustability is neither necessary nor desirable.

SIDE BAND RETENTION

The system as shown would ordinarily cut the side bands disasterously but this effect is forestalled by the use of the second harmonic. Since these currents double the received frequency they can stand twice the sharpness of resonance without detrimental side band suppression. Plus and minus 5000 cycles is a similar percentage of 1,000,000 cycles than of 500,000 cycles.

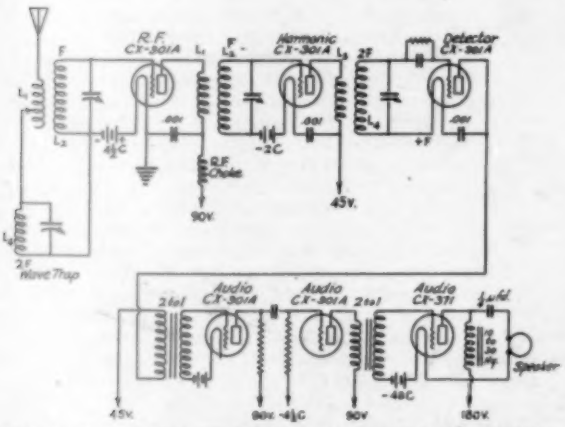


FIG. 8. A SUGGESTED RECEIVING SYSTEM EMPLOYING THE SECOND HARMONIC PRINCIPLE AND SUITABLE FOR AMATEUR CONSTRUCTION

The wave trap is tuned to the 2nd harmonic frequency, 2F, as is the third tuned circuit which supplies the detector. The remaining two tunable circuits are adjusted to F, the received frequency. The tuning condensers may be alike throughout but the inductances L4 must be decreased below L2 to secure one half the wavelength at the same condenser setting. The winding L3 is also decreased. Ordinary radio frequency transformers may be used and dimensions are therefore unnecessary. Suitable shielding, especially about the detector input circuit, is of advantage.

Special forms of second harmonic receiver have been devised and are under test in which the number of tuned circuits is reduced, but these are not suited to amateur construction and are therefore not given here.

AMPLIFICATION

Some energy is sacrificed in obtaining this second harmonic selectivity because the second harmonic energy in the plate circuit of the harmonic generator is less than the fundamental energy. The gain in selectivity seems to justify this sacrifice as energy can always be obtained by amplification while selectivity is elusive.

To make up for the reduction in energy an amplifying tube may be placed in the input to the harmonic generator as is done in the receiver, shown in Fig. 8. One or two things of interest should be pointed out in this circuit. It is necessary to incorporate in the antenna or ground circuit a wave trap which will always be tuned to the second harmonic of the incoming wave, otherwise heterodyning will occur between low wave stations and the generated second harmonic of a station which is being received at twice that wavelength. The harmonic generator tube is operated at 45 volts plate and two volts negative grid, which provides conditions favorable for strong second harmonic generation without danger of several other undesirable effects which may be occasioned by strong signals from nearby interfering stations. The audio component (last term on the right of equation 2) is merely dissipated in the 45-volt B battery. No trouble arises from running this through the 45-volt battery along with the regular audio in the plate circuit of the detector since the currents are in phase. The first tube must be run at 90 volts and a 4½-volt negative grid bias so that no rectification or generation of second harmonics will occur in this tube. Modulation (see account of R. G. S. receiver in Jan. and Feb. 1927, *QST*) must not occur either, or a nearby station will superimpose itself on the carrier of distant stations, which is an effect frequently found in ordinary r.f. receivers.

The second harmonic method of obtaining selectivity can be regarded as somewhat fundamental and as having been especially created to supply high selectivity without the use of many tuned circuits working in cascade. It seems legitimately entitled to a position in the scheme of things which may be sent forth as follows:

1. Regeneration—Negative Resistance
2. Radio Frequency—Amplification
3. Super Heterodyne—Wave Conversion
4. "Octa-monic"—Harmonic Generation

IN THE ROGUES' GALLERY AT HEADQUARTERS
BY CRUX
CARELESS MR CHANCE. THE HAM WHO OVERLOOKS SIGNING HIS FULL NAME AND ADDRESS IN LETTERS AND RADIOGRAMS TO QST
BRAINLESS MR DUMB. HE THINKS HIS CALL LETTERS ARE SUFFICIENT SIGNATURE IN HIS RADIO CORRESPONDENCE
BRAINY MR NOODLE. HE'S SO SMART HIMSELF HE THINKS THE MEN AT HEADQUARTERS ARE ALL MINDREADERS
S. LEE P. MESMORE. SO FAR ON HIS JOURNEY TO SLUMBERLAND HE DREAMED HE SIGNED HIS FULL NAME AND ADDRESS — BUT DIDN'T — JUST HIS CALL

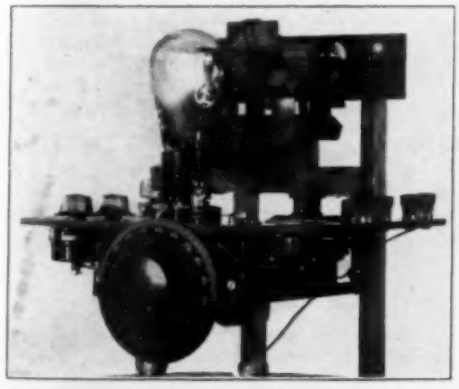
QSY—5, 20, 40 and 80 Meters

By James T. McCormick*

LET'S start this article backwards. It may help us to see things in a better light.

What we want is to design a transmitter that will QSY easily and rapidly from one to another of several wavebands. Just for a "starter" and so as to not make things too hard, let's not try to cover too many bands. "20", "40" and "80" will do, and "5" comes in almost accidentally.

Starting backwards, as I suggested, we will first take a look at the antenna. It seems to be the usual 40-meter affair. Suppose we lengthen it a bit so as to have a fundamental in the vicinity of 55 meters. That will not require any new masts and now we can use the simple switching scheme shown in Fig. 1. L is a loading coil and its purpose is to load the antenna up to 80 meters. L can be clipped into or out of the antenna circuit at will; so also with C or the straight connection. Our short antenna will be a rather poor radiator at 80 meters, but that isn't serious. We don't want to use "80" for DX. Clipping C in-



FRONT VIEW. THE SET IS MEANT TO MOUNT IN A WINDOW

Therefore must be accessible from all sides. The two small 6-volt lamps alongside the tube base supply the center tap.

Photos by Boeger of 9OW.

to the circuit tunes the antenna down to 40 meters in the conventional "below fundamental" manner. The straight connection shown permits the use of the third harmonic of the antenna fundamental for 20-meter operation. Don't worry because the third harmonic falls below the band. The thing has to be detuned, anyway, and you will find that the set "gets out" beautifully, even at the upper end of the band—though the antenna current may be conspicuous by its seeming absence.[1]

All of the "junk" shown in Fig. 1, including the ammeter, should be placed some-

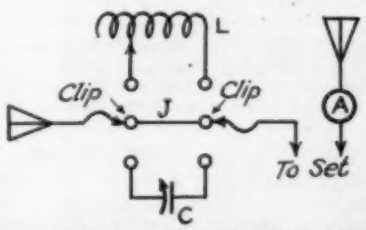


FIG. 1. METHOD OF SHIFTING THE ANTENNA TO 5, 20, 40 AND 80 METERS

The antenna fundamental is 55 meters and can be of almost any sort, the right length being found from the note on antennas. At 80 meters the clips are put on L and the antenna loaded to 80. At 40 meters the clips are put on C and the antenna cut down to 40 meters by adjusting C. At 20 meters the clips are put on the jumper J and the antenna operated regardless of tuning or else the clips are put on L, the antenna tuned to 60 meters and used on the third harmonic. All of these are with inductive feed. At 5 meters the antenna is tuned to almost any wave and voltage-fed by clipping to a suitable place along the helix.**

what away from the set proper, preferably right at the place where the lead-ins enter the shack.

Now that we have backed into the shack, let's take a look at the pick-up coil. Suppose we consider the use of fixed coupling. That will eliminate a control and thus help

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1. It is of course perfectly possible to connect L into the circuit and to load the antenna to 60 meters so that its 3rd harmonic falls into the 20-meter band. The tuning is not sharp. Naturally, any such scheme for operating the same antenna in a number of wavebands must operate with more or less disregard of the fact that theoretically an antenna shoots its energy off at various angles above the horizontal, depending on the manner of its operation (grounded and ungrounded—fundamental or harmonic) and that, according to the Heaviside Layer and skip-distance theories, this should have an important effect on the effectiveness of the station. However there is some comfort in the thought that the antenna field is all out of shape anyway because of objects nearby and that the radiation may or may not go off at the angles one desires—and which one would get in a "perfect location".—Tech. Ed.

** The length of almost any sort of 55-meter antenna can be found from one of the following references: p. 30, August, 1926, *QST*; p. 16 October, 1926, *QST* and p. 44, May, 1926, *QST*. Each article covers one part of the subject. There is no excuse for writing in to ask "How long shall I make my antenna."—Tech. Ed.

us to QSY a bit more easily. We can use few turns in the pick-up coil, couple it closely to the primary and then detune in lieu of loosened coupling.[2] There is one "fly in the ointment". If we jam the antenna coil too tightly against the plate end of the primary, we have a considerable amount of unwanted capacitive coupling —especially at the shorter wavelengths.

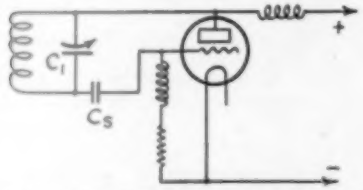


FIG. 2. SIMPLE ULTRAUDION CIRCUIT

The regeneration is not under control but the circuit is simple and needs but one coil—and that coil is tap-less.

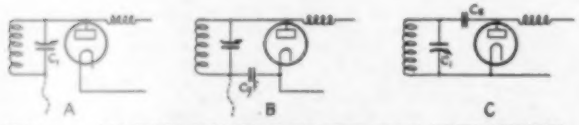


FIG. 3. AN EXPLANATION OF THE WAY ULTRAUDION FEEDS BACK

A. The ultraudion with the grid shown dotted to attract attention to the tuned circuit as a voltage-fed tuned circuit.
B. The grid-filament capacity Cgf drawn in to show that the feedback voltage can be thought of as appearing across this capacity.
C. The circuit of B reversed, whereupon it becomes the usual shunt-feed circuit with plate tuning.
B and C are not alike as to grid feedback but they are somewhat alike as plate output circuits, and are so considered in the text.

Very well, we won't couple to the plate end. We will couple the thing at or near to the node of the helix just as we place the tickler of a receiver at the filament end of the secondary.

Advancing to the rear, we come to the transmitter proper. What circuit shall we use? Hartley? Well—we had an idea that we wanted to use plug-in coils, but the Hartley circuit fairly bristles with clips. Let's look about for another circuit. The Ultraudion seems to be ideal; we don't know anything about it, but there it is in Fig 2. Let's try it.

The output is good. It seems to work, but the milliammeter in the plate circuit is trying to turn wrong side out. Let's see: If the thing were just a Hartley oscillator we would use more plate turns and stop that.

Perhaps we had best take the Ultraudion apart and see what makes it "tick." Following our rule of "hind-foremost," we will first consider it simply as an output circuit. Ignoring, for a moment, the grid-filament capacity, we have Fig. 3A. The thing is obviously voltage fed—just as we sometimes use voltage feed to an antenna. The grid-filament capacity, though small, is really there, however, as shown at No. 3B—which is simply the conventional current-feed output circuit, 3C, except that it is inverted. We conclude, therefore, that the output circuit of the Ultraudion is partly current and partly voltage fed.

We wonder what would happen if we increased the amount of current feed by adding the variable condenser, C2, as shown in Fig. 4. Besides increasing the proportion of current feed, C2 shifts the node. Ah, now we have it! Plate turns in the Ultraudion are those turns which lie on the plate side of the node. Hook up C2 and we will shift the node toward the grid end of the circuit.

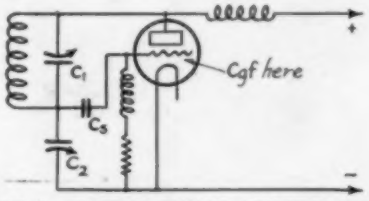


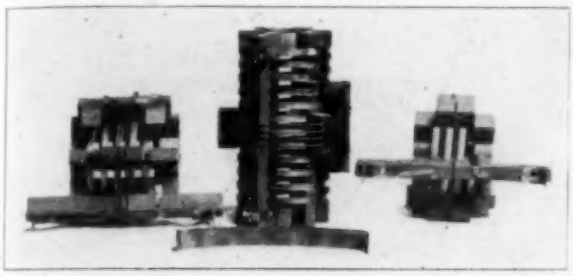
FIG. 4. CONTROLLING THE FEEDBACK

If the r.f. voltage to the grid is caused by drop across Cgf in Fig. 3B then we ought to be able to change the voltage by changing Cs. This can be done by shunting C2 across as shown. The other condenser Cs is just a stopping condenser to keep the plate voltage off the grid. Its size does not matter, as long as it is large, because the small capacity Cgf is in series with it.

Increase the capacity of C2 slowly. The plate current is decreasing and (Glory be!) the antenna current is increasing! We are listening to a harmonic, of course, and keeping in tune by means of C1. C2 has less tuning effect than we had expected. Turn

2. Satisfactory operation cannot be obtained with exact resonance unless the coupling is very loose. In practice it seems just as useful to couple more closely and then to operate off tune as suggested—that is with the set tuned to the wave wanted but the antenna a little off tune. Practically, this means that one sets the transmitter by wavemeter, then runs the antenna into resonance and finally runs it back out of resonance far enough to let the set "pick up" promptly. When the antenna is in tune while the key is held down, a good antenna current will be obtained, but if the key is let up and depressed again the current will be smaller—showing that the set did not pick up the whole load. The cure is to throw the antenna off-tune enough to permit picking up the whole load *instantly*. When the antenna meter is acting well test the signal on a distant station or better with a local pickup of the sort described by Hull on page 24 of *QST* for July.—Tech. Ed.

it in a little more. The plate current is still falling. Now the meters look very much as they did when we used the "good ol' Hartley". Turn a little more. The antenna current is falling. Whoa! It



COILS FOR THE 5-, 20-, 40- AND 80-METER BANDS

At the left is the 40-meter transformer which has a 5-turn primary and two-turn secondary. The primary winding terminates in the brass clips at the ends of the longest wooden bar. The secondary terminals point forward from the topmost bar of the helix. In the foreground is the strip which serves as a 5-meter coil. This of course does not have a secondary winding since the feed can readily be made either inductively by laying the antenna parallel to the "coil" or by capacity end-feed from some point on the strip.

stopped oscillating. We had too little r.f. voltage on the grid when we used too much capacity at C2.

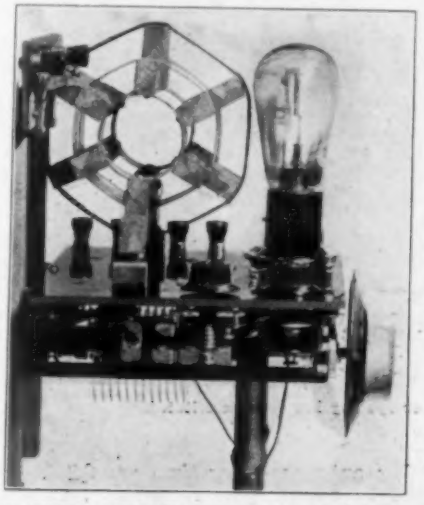
The Ultraudion now seems to "fill the bill". Since the adjustment of C2 isn't at all critical, we conclude that if we adjust it properly on "40," it will also work nicely on "20" and "80" with the same setting. If we intend to use a tube no larger than a UX-210, C2 can be a midget condenser of 50 to 100 pfd., perhaps cutting down the loss from eddy currents in the plates by reason of their small size and certainly saving us a few cents.[3]

A picture of a beautifully simple little set with just 3 tapless plug-in coils is beginning to form in our minds. Before we start building, let's look the circuit over again with an eye to further improvement. Do you remember the time we tried out an Ultraudion receiver like that of Fig. 5? Yes, yes, I know the signals were a bit weak, but do you remember the variable condenser C3 which we used to control regeneration? The condenser was connected between plate and filament and, you recall, it didn't take much capacity to by-pass enough energy to stop oscillation on the short waves.

We don't want to by-pass any energy in our transmittter. No siree! Of course, we can't do anything about the plate-filament capacity because that is built into the tube, but the distributed capacity of the plate choke is probably by-passing energy to the filament via the filter condenser. Let's move the plate choke connection to the grid end of the tuned circuit as in Fig. 6.

We haven't done much to the circuit except to change from shunt to series feed, but the distributed capacity of the plate choke is now (speaking in terms of r.f.) shunted across C2, where it is actually useful; also, the r.f. voltage is less than at the plate so that the choke has less work to do. Now try it. We think we can notice a little improvement. The theory seems to be good at any rate, so let's adopt the series circuit as final.

Let's go into reverse again. (Army-amateurs, 'tenSHUN! Backward, HURTCH!) Now we are all looking at the plate power supply. It may be a transformer, a generator or what not. Whatever it is, we don't want so much voltage as to put too



SIDE VIEW OF THE SET SHOWING HOW THE R.F. TRANSFORMERS ARE PLUGGED IN

great an overload on the tube. Too much overload will give us key "chirps;" the wavelength will slide up and down the scale to the tune of the line voltage and climb for minutes whenever we start up on 20 meters. A high resistance grid leak will help if the plate voltage isn't unreason-

3. The books and papers available here give exactly zero information on the Ultraudion though spending hundreds of pages on the other standard circuits. An appeal to several research laboratories has brought no better results. If anyone is aware of another analysis of the circuit the reference will be greatly appreciated.—Tech. Ed.

ably high. A variable high resistance used as a leak is handy when the tube is a UX-210 or smaller.

It would be nice if we could always set

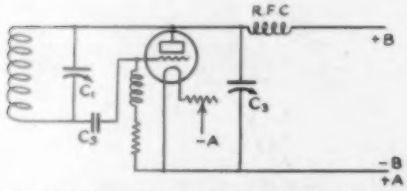
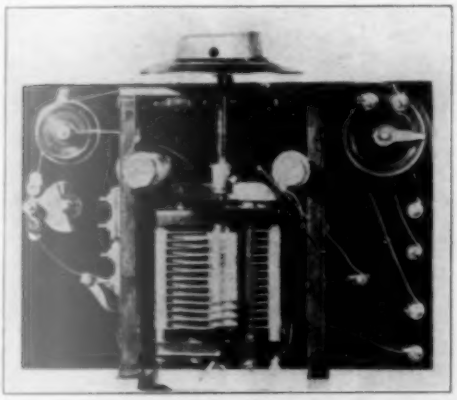


FIG. 5. ULTRAUDION RECEIVING CIRCUIT WITH VARIABLE BY-PASS CONTROL FOR REGENERATION

Very little increase of C3, the regeneration control condenser, will stop oscillation. Therefore the capacity of the choke R.F.C. is harmful and should be removed.

the transmitter to exactly the same wavelength by means of a harmonic of the receiver, but we will have to reduce power to do so unless we want to disconnect the re-

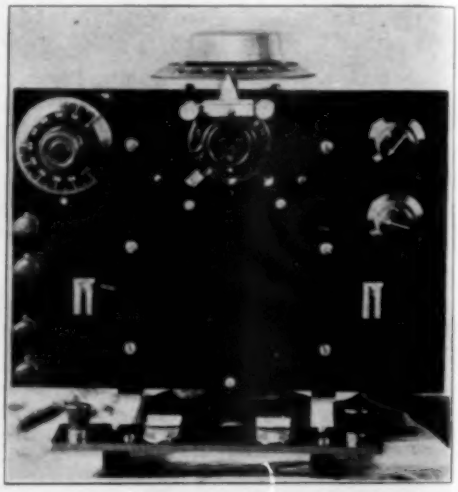


BOTTOM VIEW SHOWING METHOD OF MOUNTING PARTS AND ABSENCE OF "CROSS-OVERS"

The variable condenser shown had more spacing than a UX-210 tube needed but lacked capacity for the 80 meter band. A 500 pfd. condenser with closer spacing has been substituted.

ceiving antenna every time we QSY. We ought to reduce power, anyway, to keep from raising a lot of QRM. I suggest that we simply use the receiver B-battery for plate supply whenever adjusting. Fig. 7 shows how the switching is done at 9BHR. The battery is also useful in working locals and DX can be worked by adding more battery at "X". The "X" battery is "hot" when the main power plant is in operation and should, therefore, be placed where no one can touch it.

Anything capable of absorbing energy, such as meters, transformers, etc., should be kept away from the set, not so much



TOP VIEW TO SHOW HOW CLEAR THE BASE-PANEL IS WHEN THE TRANSFORMER IS REMOVED

The set is easily kept clean. The large dial is for tuning and operates the 500 pfd. condenser. The small dial at the upper left controls the filament rheostat. The small knob at the upper right operates the variable grid leak and the one just below it controls the regeneration adjustment condenser.

because of the power wasted as because of the fact that these things increase the resistance of the control circuit. When the

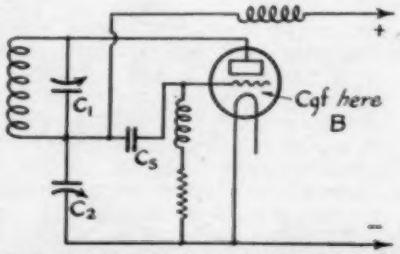


FIG. 6. THE FEED-POINT MOVED TO CUT DOWN THE R.F. VOLTAGE APPLIED TO IT, ALSO (WHICH IS MORE OR LESS THE SAME THING) TO CUT DOWN THE HARMFUL EFFECT OF ITS DISTRIBUTED CAPACITY

The circuit is now series feed; that is, the r.f. and d.c. both go thru the plate coil. Fig. 4 was shunt feed, the r.f. going thru the plate coil but the d.c. going another path thru the choke.

resistance of a tuned circuit becomes high enough, it is not at all particular as to the frequency at which it oscillates. Metallic

meter cases make nice merry-go-rounds for eddy currents. A filament voltmeter, unfortunately, must be connected directly to the filament. (I'm happy; I haven't one!)

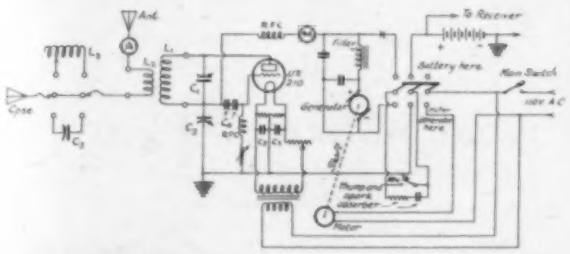


FIG. 7. THE COMPLETE CIRCUIT OF THE TRANSMITTER

L1 L2 Plug-in r.f. transformer as shown in Photo.
C1. Tuning condenser, 500 pfd.
C2. Regeneration control condenser, 75 pfd.
C3. Antenna tuning condenser, 250 pfd.
C4, C4. Two Micadons, each of 5000 pfd. capacity.
C5, C5. Two Micadons, 2000 pfd. each.
L3. Antenna loading inductance, 24 turns spaced ¼" on 4" form. The antenna system can be anything desired, provided it has a fundamental around 55 meters. The one at 9BHR consists of a 38-foot vertical antenna and 38-foot horizontal counterpoise.

The antenna is, of course, the worst offender in introducing resistance into the control circuit, but it seems to be a necessary evil in simple, one-tube, layouts.

By backing up a little more, we could discuss the operator, but I can't afford to take the chance. I shall merely mention that, given sufficient difference in operators, the 201-A becomes a much better transmitting tube than the new UX-852. (Yeh, I need several kilowatts!)

This isn't intended to be a constructional article, but the photographs are offered for whatever ideas you may gain from them.

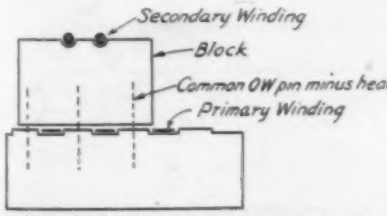


FIG. 8. CONSTRUCTION OF THE R.F. TRANSFORMERS

The primary is of copper or brass strip, the secondary of wire. This is perfectly alright because the primary current is large but the antenna current is not large, especially when working the antenna as here described.

The set shown has been dubbed "WIZ" by the local gang. It is somewhat smaller than a typewriter, but creates more QRM. The complete circuit is shown in Fig. 7.

The plug-in inductances use the famous *QST* construction. (See *QST* for April, 1926.) The secondaries are wound on blocks added to the primary frames after the primaries are in place. (See Fig. 8). The secondary or antenna coil is wire-wound to lessen the capacity between the two windings. The plug-in fittings are rather crude, but manage to serve the purpose. They can be seen in the top view.

The set is designed to fit a window-mounting, but can be used on the table if desired, the two radio-frequency chokes serving as front legs. These chokes are wound with No. 36 wire on paraffine impregnated wooden dowels. The first few turns are space wound; a single layer winding is continued for several inches to care for 20 and 40 meters and a scrambled winding added at the end to supply enough inductance to take care of 80 meters efficiently. A hole is drilled in the dowel at each end of the winding and the connecting leads are passed through these holes and secured by wedging with a sharpened match-stick.

I received a pleasant surprise when I found that "WIZ" was able to put out a

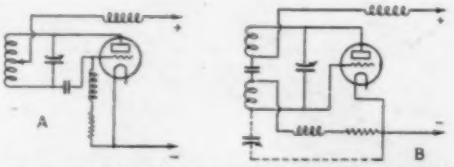


FIG. 9. SOME SPECIAL STUNTS FOR 5-METER WORK

At very short waves choke coils are less effective and all efforts must be made to cut down the voltage applied to them. At A, a clip has been put on the plate "coil" so as to locate the node where there is no r.f. voltage. Since the plate "coil" is just a straight strip this calls for no complication. Another way of doing the same thing is shown at B. This shows the stopping condenser moved to the center of the coil, after the fashion of the Hoffman version of the Colpitts circuit.

perfectly readable signal on five meters. (Puzzle: Find the 5-meter "coil" in the coil group.) It did a rather inefficient job of it, to be sure, and the circuit isn't recommended for 5-meter work.

For 5 meters, some effort should be made to take the r.f. voltage off of the chokes. We can move the plate choke connection to the center of the helix as in Fig. 9A, but, if we are to have three connections to the coil, we might as well use four in the "split" circuit, 7B, and take the r.f. off of the grid

choke as well. Our friend, "C2," may still be of use at 5 meters, but the capacity will necessarily be tiny and its use will again put r.f. voltage on the chokes. In view of the latter fact, it might be well to make the grid half of the helix a bit smaller than the plate half.

One thing must be remembered about this circuit; the entire helix is "alive" and at the plate voltage. Now do be careful, fellows. I don't want to tune in on any "spooks" singing, "The Helix Was Hot!"

Another International 5-Meter CQ Party

TO settle the puzzles that arose from the first 5-meter CQ party as reported in the Experimenters' Section of this issue, another international 5-meter CQ party is to be run.

The schedules are simpler and the announcement is being made further ahead of time to avoid the mistakes made in the June test.

It should be possible for everyone to have apparatus ready and in good order, even in those countries where *QST* arrives very late.

THE SYSTEM

There will be transmissions on two weekends, each transmission being divided into two tests 12 hours apart so as to make the daylight chances more equal. To give a better chance for signals to fade, larger groups will send for longer periods than in June. It is suggested that where possible the transmitter be run by one man while another takes the receiver out and listens thru the *entire* test.

The whole test, accordingly is as follows.

Weekend of November 12-13, send schedule A and 12 hours later send same schedule which is then known as schedule B.

Weekend of November 19-20, same program, that is schedule A as shown in table and repeat same schedule 12 hours later.

The following conditions remain almost unchanged from the former test.

1 Prizes will be given for the best DX in the way of reception, provided that the reception is fully confirmed by some copy of what was said and all other details that can possibly be thought of.

2 For the best two-way contact arising from these tests there will be a separate award, providing the distance is over 600 miles. "Best" here means both distance and goodness of communication.

3 If there is any doubt on the awards a committee will be chosen to decide.

4 Be sure to operate your transmitter between 4.9 and 5.1 meters, using the best standards you have.

5 Call CQ *once*, put your intermediate in *once*, then sign *three* times and repeat. If any code letters are added think them over to be sure they will not be confusing.

6 When you copy anything notify A.R.R.L. headquarters at once by radio and wire, confirming fully and in detail by mail.

—*R. S. K.*

SCHEDULE A
Starting Time and Day

DIVISION (each sends) (10 ½ hour)	LOCAL CLOCK TIME AS GIVEN BY NEW YORK WORLD ALMANAC *See note* †		LONDON TIME	NEW YORK TIME (Eastern Standard)
1 NEW ZEALAND AUSTRALIA OCEANIA, including HAWAII	MELBOURNE	8:00 A.M. Sunday	10:00 P.M. Saturday	5:00 P.M. Saturday
	WELLINGTON	9:30 A.M. "		
	HONOLULU	11:30 A.M. "		
2 ASIA AFRICA ASIA MINOR	ADEN	1:30 A.M. Sunday	10:30 P.M. Saturday	5:30 P.M. Saturday
	BOMBAY	4:00 A.M. "		
	HONKONG	6:30 A.M. "		
	YOKAHAMA	7:30 A.M. "		
3 EUROPE	PARIS	11:00 P.M. Saturday	11:00 P.M. Saturday	6:00 P.M. Saturday
	AMSTERDAM	11:20 P.M. "		
	BERLIN, ROME, STOCKHOLM, COPENHAGEN, — Midnight between Saturday and Sunday			
	LENINGRAD AND ATHENS	1:00 A.M. Sunday		
4 ALASKA MEXICO SOUTH AMERICA CENTRAL AMERICA NORTH AMERICA	SAN FRANCISCO, U.S.A.	3:30 P.M. Saturday	11:30 P.M. Saturday	6:30 P.M. Saturday
	DENVER	4:30 P.M. "		
	MEXICO	4:54 P.M. "		
	CHICAGO	5:30 P.M. "		
	SANTIAGO DE CHILE	6:47 P.M. "		
	RIO DE JENEIRO	8:30 P.M. "		

† If in any doubt figure from New York or London
Schedule B is the same except just 12 hours later

Municipal Ordinances on Radio Transmission

By Paul M. Segal*

ONE cannot trace to any single cause the recent epidemic of radio control ordinances. Congress' long hesitation to remedy the intolerable lack of regulation under the Radio Act of 1912, the necessary delay in administrative organization under the Radio law of 1927, a current tendency to regulate almost everything capable of regulation, a somewhat prevalent lack of knowledge of the causes and cures of radio interference, and, in some localities, a desire to obtain revenue for the city affected—all these are among the contributing factors responsible for municipal ordinances dealing with the subject of radio transmission.

Ordinances thus far passed have been very diverse and their nature can here be indicated only very generally. They fall into five major groups:

1 Ordinances the main purpose of which is to impose a substantial license tax upon the privilege of conducting a radio station within the city. Of this type is the ordinance of Wilmore, Kentucky.

2 Ordinances which seek to regulate very widely the subject of radio transmission within the community, fixing locations, power, operating hours, requiring licenses and inspection, etc. An example of this class is the ordinance of Minneapolis, Minnesota.

3 Ordinances which seek to limit amateur transmission in the interest of broadcast listeners, such as the old Portland, Oregon, and Salem, Oregon, ordinances and that of Marshfield, Oregon.

4 Ordinances which seek to eliminate interference from devices not originally designed as radio transmitters, such as X-ray, violet ray and diathermy machines, overambitious generators, abnormal heating pads, etc. There are such ordinances in Portland, Oregon; Atchinson, Kansas; Crescent City, California; and many other places.

5 Ordinances based upon the National Underwriters' Code and relating to wiring installation. Practically every large city has such an ordinance.

1. It should here be mentioned that through the intervention of the A.R.R.L., the Wilmore ordinance is now being attacked in Court, the old Portland ordinance was so attacked and its objectionable features removed, the Salem ordinance was vetoed before it could become effective, the Minneapolis ordinance was interpreted as not applying to amateur installations, many ordinances therefore introduced were withdrawn before final passage and some were voted down.

*9EEA, Denver; A. R. R. L. Director, Rocky Mountain Division; A. R. R. L. General Counsel in the Portland and Wilmore ordinances herein mentioned.

Of particular interest to amateurs are ordinances in the first three of the above groups. They are claimed by their proponents to be a proper exercise of the municipal legislative powers. If this were true it would mean, practically, the possible crippling of amateur communication. Revenue-hungry cities, by placing high license fees upon our stations (which cost us enough already) could do serious harm. City councils which believe in the one-time B.C.L. credo that all noises not in the nature of jazz music must come from amateurs, could impose an utterly intolerable combination of quiet hours throughout the country. If the principles underlying some of the ordinances are correct, some misguided cities would drive us out altogether.

But, fortunately for all concerned, such cannot be the law. The United States of America is a federal state; it is a Union of States, each possessing complete sovereignty except so far as that sovereignty has been added or given up to the federal government. Under such a system there are many powers, such as those to levy war, to raise armies and to coin money, which it would be ruinous to allow the states to exercise individually. On principle, radio communications is just such a matter. To allow the states, or their subentities, the municipalities, to regulate radio communication, is to allow them, if they desire, to destroy it, to compel its advocates to fight for their rights in a thousand places at once, to prevent a station in one state from communicating with one in another by hindering regulations in either place, and, generally, to do infinite mischief.

It is of course impossible that the framers of our Constitution could have had radio in mind when that document was written and the relative rights of the states and Congress therein fixed. Doubtless they would have caused the arrest on a charge of blasphemy of anyone who suggested the possibility of such a thing as radio. But, skilful men that they were in the science of government, they recognized the principles which should apply to all matters of the nature of radio.

The eighth section of Article 1 of the Constitution says: "The Congress shall have power....to regulate commerce with foreign nations, and among the several states and with the Indian tribes."

The language of this provision is beautifully simple, yet there have been thousands of law suits making necessary its explanation, interpretation and application.

From the axiom, the courts have derived many corollaries. It is necessary here only to consider such as may be applicable to amateur radio.

A principle that was established very early was that the giving to Congress of the right to regulate international and interstate commerce naturally deprived the states and towns of the right to make conflicting regulations, for certainly the Constitution and the laws enacted thereunder are the supreme law of the land. As to those kinds of commerce which Congress has not yet regulated, it came to be held that the states had the right to pass laws regulating them unless the particular system involved was such that required (or even admitted of) a uniform system of regulation and control throughout the land. When this was found to be the situation the courts said that the states and cities had absolutely no power of regulation whatsoever and Congress' failure to pass a regulatory law amounted to a declaration that that type of commerce should be free and unregulated. This rule was even applied to cases where the cities attempted to pass regulations which were claimed necessary for the protection of the lives, property, health, safety and morals of their residents under the so-called "police power." Later, however, it was decided that cities could pass such "police power" laws where the regulations dealt purely with matters of local concern and were not unreasonable burdens on the commerce itself.

It was decided that in determing what was interstate commerce it was not necessary to ask whether compensation was received for the transaction.

The courts also said that while these principles applied only to commerce between the states, there were certain instances where a transaction in commerce was so interwoven with similar commerce beyond the state that it was necessary for the power of Congress to extend to instances of interstate commerce as well.

The application of these principles of constitutional law to the facts of amateur radio communication, as we know them, should be quite simple.

It is plain, in the first instance, that radio communication is interstate commerce. If it were not, Congress had no power to pass either the 1912 Law or the Radio Act of 1927, both of which are valid only if the assumption is correct. In 1914 a Massachusetts court held radio transmission to be foreign and interstate commerce and as such not liable to state taxation.

While it is equally plain that we amateurs derive no financial compensation for our efforts, we are not thereby derived of our protection.

Paragraph (d) of Section 1 of the Radio Act of 1927 is so broad in its definition of interstate communication as covering all transmissions of signals the effect of which extends beyond the borders of the state in which it originates or which is even capable of interfering with any interstate communication, that we are all included, even though we may be in communication only with the station in the next block—and this inclusion is proper.

Also, there has been a rather complete regulation of radio by Congress. The present law is quite explicit in its declaration of an intention to regulate the entire subject completely. Whatever gaps may be found in the 1927 law are being rapidly filled by the Federal Radio Commission.

But even if there were no Radio Act of 1927, amateur radio communication requires a uniform system of control. If we are to work at all, we cannot have different quiet hours in each community. We cannot have different wave bands assigned us by the countless cities and towns of the nation. We cannot have our individual city councils telling us where we may or may not erect our transmitters and what systems of transmission we shall use. To even exist, we must have a uniform system of control throughout the United States, if not throughout the world.

Further applying these principles to our own situation, it becomes plain that all radio ordinances of the first three of our five groups are unconstitutional and void and that ordinances of the fourth and fifth groups are valid if reasonable.

No city can place a license tax upon the privilege of operating a radio station or require such station to take out a municipal license. A license tax or system is a burden and hence an unlawful regulation of interstate commerce. No city can lawfully attempt to tell amateurs what power or wave bands they may use, where they can place their transmitters and how they shall operate them, or what quiet hours they shall observe. All this is for Congress and the Federal Radio Commission to regulate, and for them alone. Nor can any city arrogate to itself the right to discriminate between radio services and handicap the amateur in the supposed interest of the broadcast listener.

On the other hand, a reasonable set or regulations on electrical installations to minimize fire risk is perfectly proper in an ordinance because this is a matter of purely local concern for the protection of life and property. So also an ordinance properly limiting the operation of interference-causing devices which are not used in interstate commerce would be proper because it is in aid of interstate commerce rather than a regulation thereof.

T. O. W. Sez Her Sa

By Ma

PA's at it again. Such ravin' and cussin' and carryin' on as you never herd before. Pa's vocab'lary never was much but I'm beginnin' to think mebbe he's been misjudged. He must have been diggin' around in some of Rabelais' and Boccaccio's writin's to get sum of the high-falutin' cuss words he's been spoutin' lately. Such a rage I never seen and the neighbors allow as how Pa'll land in the asylum in a strait jacket yet.

For nigh 40 years I've been livin' with the ole man an have paciently humored his pekuliarities and even when the radio bug plunged its proboskis in his orney hide back in 1910 I let him muss up the house with his junk and he's been ridin' his hobby hoss ever since. I stood up for him when he was declared a public nusense and the neighbors were goin' to sue him for keepin' 'em up all nite with the inferal racket from his ole rotary spark thingamajig. He dug up the hull back yard buryin' wire fer a ground. He's cut my clothes lines time and time again. He put up a wrickety old pole that blew down and took all the telefone and lite lines with it. His old set usta use so much juice that the power company cudn't furnish enuf to keep the lites lit. Oncet the butcher around the corner got so mad at Pa because the lites in his shop were dim that he run Pa clear down Main Street with a meat cleaver. Yes, Pa's been thru it all and in spite of the shabby way he has treated me I'm proud of him. He knows radio and has been thru the mill from cat whisker to quarts, both liquid and solid.

Of course the O.M. has tried hard to keep up with all the modern invenshuns in amateur rado and the old machinery that et up all the juice and nearly busted us payin' fer power has been swept out of the house with the rest of the dirt and Pa's been spendin' all my pin money buyin' those there V.T. tubes, condensorators, etc. Yes, Pa has a real up-to-the-minit outfit now.

Last nite was the limit tho and much more of it'll have Pa lookin' fer a new woman. Hadn't got the supper dishes offn the table when that ole crony of Pa's, Jim Black, came over to the house and he and Pa abskonded to the "shack" that usta be my Sunday go-to-meetin' bed room. While I was gettin' the dish water hot Pa and Jim loded up there villinous corn cob pipes with Ginger Twist and rared back with there feet on the operatin' table that usta be my library table and pretty soon smoke was rollin' out of the door like the smoke outn the ole mill down on the crick on the other side of town. I culdn't just hear what they sed but no it was about what they wanted to do. Jim wanted to gas with some locals but the ole man wanted to work sum DX what he calls it. U no Pa usta be strong fer workin' traffic and keepin' frenly with the boys in the states around here and snorted with digust when any body hooked up on some gud DX. Yes, Pa wasa model operator wunst and usta rite lots on how to operate ur set and had a gud smeller when it cum to runnin' down anything rotten in Denmark. Oncet, however, one of the kids here in town drug Pa over to his plant and hawg-tied him while he proseeded to hook a few forein suckers. Pa got interested rite then and the ole bug stuck his bill in him fer another deep bite. Pa hain't been rite since. All he can talk about is GMT and the string of furriners he's goin' to hook up with. Jim's

still got sum sense left but Pa is takin' it outa him and tryin' hard to get him interested and now they are both learnin' Espranto or sumthin like that.

Last nite Pa finally got Jim to agree to try sum DX with him and I cut see em screw the cans on their heads and lode up with a fresh pipeful of tobaccy. The fust thing I herd Jim let out a howl of glee and asket Pa who nj-2PZ wus. Pa snorted and sed that ain't no DX that's only Jamaky and thet thet bird sure cud work sum keen DX. With the smoke a-curlin' up from his pet fumigator the old man twisted the dials sum more then lets out a wild yell while Jim's eyes pooch out like dog's ears. "Hot dam, its ole ep-1AE hisself", pants the ole man. With the squeaky lil CQ shrillin' in and the blue smoke a-rollin up frum a pair of furius pipes and spoilin' my new wall paper those two ole reprobates cud hardly set still from the itch. Pa heavs a hugh sigh of satisfackshun and sez to Jim, "Here's where we nail that bird's hide to the wall." With great delivera-

shun and sollemnity the ole man shoots the juice to the dusty ole squeek box in the corner, pushin' the power up and violatin' all the laws of common sense with the plates of them V.T.'s all shades of pink and starts to call. One minit! two minits! three minits! then Pa shuts down with a fond hope

KITTY... CUMS SAILIN' THRU THE KITCHEN DOOR LIKE HE HAD WINGS AND LANDS RIGHT ON MY BACK..

a-kindlin' in his eye, holds his breath and lissens then gives Jim a huge nudge in the spair ribs and hisses, "Got 'im b'gosh". About that time things start a-poppin'. Some lid with a sig abouten R-99 an a tone liken a duck with the asthma or a saw mill with half its teeth, busts loose rite on that Portugees ham's wavebreath. I cud hear it rite out in the kitchen and it was nu—2A—somethin'. Pa jumps up frum his seat with blood in his eyes and grabs up his chair and slambs it down on the floor with a string of cussin' like the hydraphobie, and Kitty, who was peacefully sleepin' under the monkey stove and who is familiar with Pa's tantrums, jumps up and burns the hair offen his back on the stove and cums sailin' thru the kitchen door like he had wings and lands rite on my back with all his claws a-stickin' in. That starts me an I drops my favorite piece of china that I'm wipin' and it smashes into smithereines.

In all the hullabaloo Jim looks scairt-like and I seed him lookin' to see if he cud make it to the door. All the time Pa is a-cussin' an ravin' about sum durn fool hams not stayin' where they belong and gummin' up gud DX by being offen their wave band. Pa throws down his corn cob and grabs up a plug and bites off a hunk that wud choke a hoss an spits on the stove vishusly and starts givin' Jim a lecture on rotten hams and rotten operatin' and the various deseasus of rado bugs in gineral. I thot Pa had gotten that offen his chest long ago but he's still got it.

After abouten a hour of that ole lunaticks ravin' Jim and me manage to get him pacified a bit and the neighbors get a lil more peace and quiet and Jim reckons as how he better get home to the ole lady and I knows its just because he's a lil leery of Pa.

Pa's been gruntin' in his sleep all nite and kickin' the covers offen the bed and caint seem to get his mind offen the bisness. Of course the ole man is rite but this rarin' and a boilin' around gets on an old woman's nerves. I don't no much about this rado bisness but it seems to me that there oughter be sum way of keepin' our hams on there rite wavelength. I heerd Pa tell about the OWLS boilin' the midnite oil tryin' to give the boys a chanst to callabrate their wavemeters and abouten all the land marks thet a ham can go by to see where he is at and I don't see no reason fer all of this monkey bisness. It seems to me thet this off-wave bisness is due to one of two things. Either its ignorance or because a feller thinks he has better chanst to raise sum DX by bein' outen bounds where he won't be smothered by a lotta other stations. The ole woman don't like to think people are all bad but with the eddication *QST* has been givin' abouten wavemeters it kinder looks like a lotts this monkey bisness is done intenshunally. I love my ole man and don't want to loose him and if the amateurs will stay where they belong, the ole man and me will be happy and get along fine as he don't lissen to nothin' anymore but DX and rotten operatin' from a furriner don't seem to bother him none now as he thinks they haven't been eddicated yet.

Sum of these here retty-snitchers shud get in touch with Mr. Hoover and his Commission and have 'em get out there big woof-hong and make the U.S.A. safe fer honest hams and my ole man and me.

Strays

9DUH says: "Just QSY'd fm 20-meters to 40-meters es cudn't sumthing b done fr the mob on tt band, sa, widen it out a cuple of feet so they all can get in it? Nw I no what QRM means."

—·—·—

Amsco Products Inc., of New York City have issued an interesting booklet under the title of, "The Amso Resistor Handbook" which may be obtained for twenty-five cents. It gives quite a bit of information on the uses of resistors and how to calculate just what sizes are needed for various purposes.

—·—·—

We have received a newspaper clipping giving the following information concerning our beloved (?) CQ.

"CQ," meaning "Come Quickly, Danger!" is the present-day wireless distress signal. The first letter of the word "danger" is no longer used. The average amateur must be a very calloused individual the way he overlooks these "distress" calls.

nj2PZ

By Clair Foster*

IN submitting this, I am assuming that it is permissible for one ham to send in a description of another ham's station. When I asked said other ham to describe his outfit for *QST*, he demurred, but did acquiesce to my doing so. nj2PZ has been one of the outstanding stations this past winter and just because its owner is bashful with the pen is no reason why the rest of us should be deprived of a description of his station.

John Grinan in the "good old spark days" (applesauce), used to sign just "JG." That was back in 1908, when radio laws and regulations were not considered necessary adjuncts to a station. Later, but still in pre-war days, he signed 2PM. He was also a member of the staff of 1BCG during the first transatlantic tests with Godley. Then, comes a hiatus in the Grinan radio history and, years later, he bobs up at Kingston, Jamaica, in the West Indies on the Grinan Sugar Estates. During the winter of 1926-27, he could be heard "chewing the rag" by the hour on 32 meters with his old friends, C. R. Runyon and Major Armstrong from nu2AG. These chaps had nagged him back into the game and had initiated him into the mysteries of short waves. It must have seemed odd to Grinan, spending whole Sunday afternoons conversing with them with a lone "50-watter" from Jamaica, when they used to find it hard to work one another with 2 Kw. over the fifteen miles between New York City and Yonkers, eh?

The set at nj2PZ, for which Grinan says nu2AG is mostly responsible, is a typical tuned grid and plate arrangement, but more than ordinarily well designed and containing plenty of variables for getting that last ounce out of the set. The photo shows Kenotrons which gave just a suspicion of d.c. to the note. I heard Grinan ask nu6OI one night if he could see any trace of d.c. and heard 6OI tell him, "Lord, no." At any rate, the fine adjustment of the set sharpened the wave so that the slightest movement of the tuner threw the signal completely out. The note was always low-pitched but smooth and had carrying quality.

Power at 2PZ was always bad, about 40-cycles and with sudden and frequent changes of voltage, amounting sometimes to as much as twenty volts. This caused much holding down of the key, to observe meters, and much twisting of dials to bring the output up to the proper value. Because of this power uncertainty, Grinan used a keying method that sure kept him on the air, sending out a fine bunch of signals on a back-wave, very close to the main wave and always just about as loud. I used to fall into the back-wave and catch myself trying to read something that sounded like Russian. One of Grinan's frequent questions was, "Well, who is the louder tonight, I or the 'Russian?'" If the "Ayes" didn't have it, there would be a quick switch of wireing; then I'd have to watch out not to fall afoul of the "Russian" on the other side.

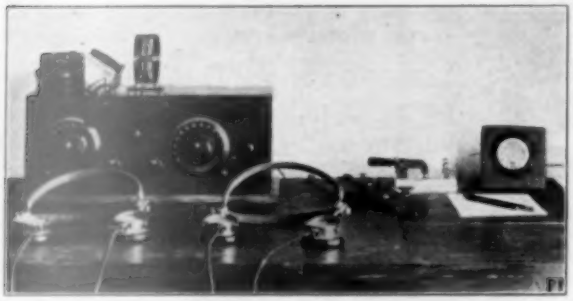
THE TRANSMITTER

The two power transformers are used in series because of the 40-cycle supply. The two kenotrons may be seen just behind them. To the right of the 203-A is the grid coil with its tuning condenser and the variable grid condenser. On the other side is the plate and antenna coils with the plate tuning condenser and antenna series condensers.

2PZ's antenna was 65 feet long, semi-verticle with a two-wire counterpoise. So I suppose the set was tuned to the second harmonic of this system. Just as good as an odd harmonic, apparently, though not so easy to feed. With a well-tinkered vertical Zepp, signals would have got out even better than they did. Rather a rash statement, this, in face of the fact that up to this writing he has worked over forty different countries in all continents. This includes the continent of Antarctica, for he worked ARDI, the Norwegian Whaler, *C. A. Larsen*, when that ship was in the Ross Sea and the nearest to the South Pole she ever got. Next day, John told me the ship was at 76 and something South when he worked her and wanted to know how far South she was when I worked her. I told him, "Of course, she is on her way home now," and that I had worked ARDI at about 85 or 90 South, somewhere around there.

*6HM, Carmel, California. At Alberni, B.C., Canada, during the summer.

Asia was 2PZ's hardest job; for he and our friend Earle, am1AB also known as vs1AB and ss2SE, in Singapore, were a great deal of the time in tropical QRN. Grinan and Earle used to brag about their respective qualities of static, telling the length of the sparks they could draw when opening their antenna switches with sticks



THE RECEIVING TABLE AT nj2PZ

of wood. Earle finally won out with an arc of 2 inches between his antenna and ground connection. Now, if you don't believe this, don't come to me with your troubles. I didn't see it mind you; just heard 'em talking about it. And I'm not saying that I believe either one of them.

Among other notable performances, nj2PZ worked oa5WH nine times, the long way around. They are on opposite sides of the equator, so it can't be claimed that the signals instead of going the long way around took a short-cut towards the South Pole in the dark. The DX, the long way, between the stations is some 14,900 miles, nearly 900 farther than the long way between California and South Africa. And while thinking of this, don't forget the guy at the other end, little 5WH with his twenty watts input!

In this, as in most other pieces of apparatus, it is the man at the controls who is largely responsible for performances. As an operator, I imagine that "JG" is one of the very best. Harris, operator of the British station at Jamaica, was at the key at 2PZ one night while Grinan was having a nap. He spent most of the time telling me what a wonderful op Grinan was. "You just ought to see John in action, handling traffic at our station!"

I know I always could read Grinan half again as fast as I could anybody else. One night he said, "Say, I send to you at the same speed as to oz2AE and the others and I notice that you never miss anything. Always have the feeling that you are holding out something on me. How's this?" Then he did blaze away for fair. I nailed the old bean down to the job and told him, "All OK, doggone you. But I hope none of my friends heard that; for they haven't your fist."

He is a mighty good dial spinner, and can keep track of a lot of different stations all at the same time. One of his delights is to get several of his friends in on a "party," each talking in turn for the benefit of all. That was a new experience for me; I have a hard enough time talking with just one. When one of these Grinan affairs is on, you sure have to keep your eyes peeled, for old "JG," being the host, feels privileged to butt in at any time with something trenchant and you are expected to get it. I recall one such party at which he had as his invited guests, 4DBA in Germany, 2AE in New Zealand and 6HM in the USA. It was his common practise to work stations on two or three continents at the same time.

At traffic handling, he shines. The ease with which he raised stations he wanted when he wanted them was always a mystery to me. Persistence, I suppose, coupled with having so many friends always on the watch for him is the answer. For example, when recently, the five-meter tests were announced, a stack of messages signed Kruse were given to 2PZ by oz2XA. These were all handed by him to their various countries in Europe and Africa within two hours.

As a "rag-chewer," too, Grinan is a real aerial conversationalist. I have spent many an evening just listening to him working oz2AE and others, without myself touching the key. That is one reason why I know so much about his doings. When he burned out a few things and was off the air for a while, oz2AE and I talked one night for two hours and the burden of our song was largely about how darned lonesome the air seemed without "ole Johnny," as 2AE put it.

I have often wondered what someone, peering into my shack in the still watches of the night, would think, seeing me sitting all alone but wearing a broad grin or laughing aloud over some such sally as when I told Grinan about having a new lattice mast 105 feet high and said my wife had called it a veritable Tower of Babel. He promptly came back with, "Tower of Babble is right and let's hope it doesn't become the leaning tower of pieces." Or, of the time he told me he was receiving stacks of cards on many of which were written, "Do nj2PZ and nu6HM work other stations?" He added that soon we would be as famous together as ham and eggs.

(Continued on Page 32)

A Letter That Grew Up

QST's authors must be a very funny sort. A lot of them have written in here and said that we should tell the rest of you a story that was sent out to them; and they have persuaded us. Perhaps they were just trying to be humorous. If so, it's too bad, for the story is about to graduate from its mimeographed form into an article in type with genuine Don Hoffman illustrations.

Here it is.

THE MACHINERY STARTS

One of the many members of A.R.R.L. has finally been persuaded to write down some of the things he has found out about radio. It has been a slow and painful

business for he is dead sure that all wisdom begins in Hartford and that his opinion is no good. This is nonsense, but a great number believe it.

Perhaps the story is different and the author has just sent in a burning contribution *without being asked.* There are (bless them) a few that do that.

Or finally, maybe the author has sat down with a red-hot pen and an asbestos

shingle to correct the pernicious and malicious things those crooks back there in Connecticut are printing in the magazine—"dernem do they think they can get away with that?"

In any case—the story arrives in Hartford, if the author packed it carefully. Often enough he puts it into a light envelope and it worries out and we get only the envelope—followed a week or two later by a bitter letter asking why we don't stop loafing long enough to answer *one* letter. However, this story is supposed to have gotten here and to have passed muster as possible *QST* material.

WHY ALL THE DELAY?

The author is told that it is to be used in *QST* and immediately starts to look for it in the next issue. Well—it will not be there. Let's see why.

1. Editing (one hour to several weeks, depending on shape material is in and amount of correspondence with author that is necessary). *QST* material is edited more slowly than that of most magazines because we strive to be as correct as possible. We are not always so, but we at least try. Sometimes we get "scooped" but *QST's* present position proves that the idea *is right.*
2. Drawing of illustrations by draftsman and setting of type by printer.
3. Correction of drawings and type in galleys.
4. Making of linecuts and halftones by engraver.
5. Paging of material.
6. Correcting of page proofs.
7. Pasting of the "dummy" from which the printer works.

(Meanwhile the cover and advertising section have been going through similar steps.)

8. The actual printing of the magazine. About the same time the Circulation Department is addressing the wrappers.
9. Gathering, trimming and covering of the magazine.
10. Mailing of the magazine, first to the most remote subscribers, then to nearer ones and finally to those in New England and to the Newsstands. (The processes after No. 1 take about 25 days.) That is why the "absolute closing date for July copy" is the 31st of May.

SPEEDING THINGS UP

The things by which contributors cause their large share of delay are:

1. Failure to make the story complete, so that correspondence must be written.

(Imagine yourself on the outside and try to understand your own writing. Better still, try reading it to someone else, preferably a beginner. The best writer is the simplest writer.)

2. Enclosing snapshots or photos made by a porfrait man instead of "hard", fully exposed prints from a negative made with an aperture NOT LARGER THAN f-32. It is better to use f-64. We have a circular that tells about this.

3. Failure to give a complete address. Much time is wasted by contributions signed by radio calls, or with the street number missing, or with the initials left off.

4. It also helps to turn in all material typewritten double-spaced and with a *carbon copy attached*. If comment is to be made we can then start one copy thru and send the other back with comment.

5. The worst delays of all are those caused by mailing the contribution as part of a letter. That also relates to subscriptions, communication activitites or what

not. Usually such letters are made worse by careless writing and even by using both sides of the paper. We have no process for unraveling a *QST* contribution from such a letter; the other matters are attended to first and the *QST* material reaches the technical desk about the time it dies of old age.

—*R. S. K.*

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nj2PZ

(Continued from Page 30)

My wife happened to be in the shack at this time and remarked, "Well, I think he's right, you are both hams and both hard-boiled." Oh, I could always keep my end up with John—with my wife in the shack!

A LOOSE NUT

Pacific Division Convention

Hotel San Diego, San Diego, California, October 14th and 15th

THE stage is being set by the Silver Gate Amateur Radio Association for the holding of the Pacific Division Convention in their beautiful city of San Diego, on the dates mentioned above.

This year's convention is expected to surpass all past conventions, and Headquarters is sending its technical editor, Mr. Robert S. Kruse, as the official representative. Besides the regular meetings where the best talks will be given, entertainment features such as trips to the Naval Base, Mission Beach and stunts of all kinds have been arranged.

Exceptionally low hotel rates have been made by the Hotel San Diego; rooms will range from $1.50 up and with extra cot in room at 50c per cot.

The convention committee reports the price of registration tickets will be $4.00 which will include banquet, badges, program, personal decorations, swim, one lunch and trips.

Make preparations fellows, and write D. C. Good, 6AJM, Convention Manager, 1821 Altura Place, San Diego, Calif., and tell him you will be there.

Kansas State Midwest Division Convention

Sept. 9-10, Independence, Kansas

THE Imperial Brass Pounders' Club is sponsoring the convention and from reports of the committee it will be a "bang-up" affair. F. E. Handy, Communications Manager, from Hartford, will be with us.

Drop a line to Orin B. Gambill, Secretary, 913 Chaney St., Independence, Kansas.

Strays

4DU's dog started to drink the solution out of his chemical rectifier while 3,000 volts were across it. Hot Dog!

—·—·—

We have received announcement of the marriage Miss Euphrasie Jeanne Raffo to Malcolm P. Hanson of NKF and formerly of 9XM and WHA. Congratulations and very best wishes from the gang.

—·—·—

4NE tells us that 4VH uses a Coco Cola crate as a rack for his chem rectifier jars. It works fine if the jars are not too large and if one crate won't handle them all, just lash two of 'em together.

The First Filter Condenser

By James Millen* and D. E. Replogle †

THERE seems to be a general lack of ready information as to just what effect changes in value of the initial capacitance such as C_1, in Fig. 1, have upon the general performance of the plate-power supply device, particularly if it employs a gaseous rectifier.

One fallacy that appears to be rather widely accepted is that, as the value of this initial condenser is increased, the load on the rectifier tube is greatly increased. At first thought, such a statement seems rather reasonable, as, the higher the initial capacity, the lower the impedance of the short-circuiting path offered by the condenser to the a.c. component in the output—which due to lack of filtering is rather high.

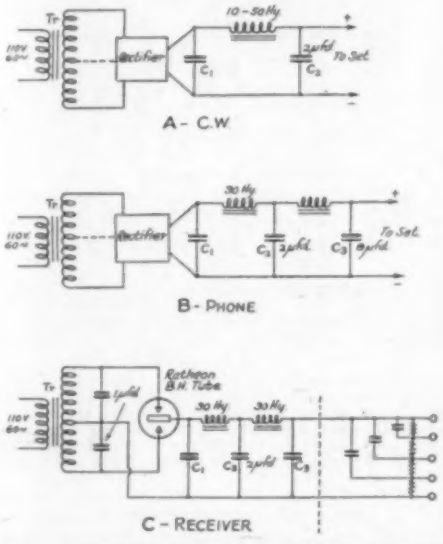


FIG. 1. TYPICAL RECTIFIER FILTER SYSTEMS
The condenser under discussion is marked C1. A is a system such as is ordinarily used to supply amateur c.w. transmitters. B is a system such as is necessary to supply radiophone transmitters. C is a complete circuit for one type of system used to supply receivers. In A and B, the dotted line is a wire which would be omitted in a "bridge connected" rectifier. In C, the 1/10 μfd. condensers are not part of the filter but have to do with the action of the Raytheon tube while the apparatus to the right of the dotted line is a "voltage divider" system to take off the different voltages for the detector and amplifier tubes.

Experimental investigations, however, indicate that the a.c. flowing through the first condenser remains substantially the same (90M.A.) for values of C_1 over 2 μfd. condensers with Raytheon BH rectifiers and a 230-volt transformer regardless of whether this capacitance is 3, 4, 6 or 8 μfd. Such action may readily enough be accounted for. Let us look at the curves in Fig. 2.

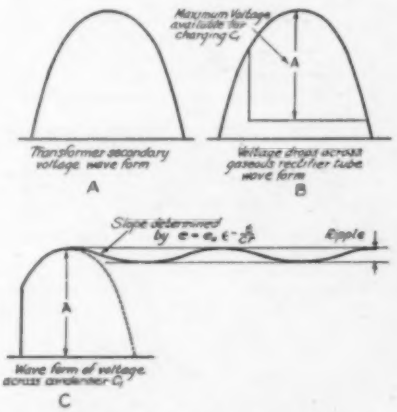


FIG. 2. WHY ONE MAY EXPECT THAT ABOVE A CERTAIN CAPACITY AN INCREASE IN C1 WILL NOT INCREASE THE LOAD ON THE RECTIFIER TUBE BUT WILL CONTINUE TO IMPROVE THE OUTPUT VOLTAGE AND THE PURITY OF THE OUTPUT

At A we have the wave form of the transformer secondary voltage.

At B is shown the form of the voltage wave across the rectifier tube. As indicated, the difference between A and B at any time is the voltage available for charging the initial filter condenser C_1. Now let us consider C_1 discharged and follow just what happens during the initial charging cycle.

During the first half cycle, C_1 will charge up to the peak value as indicated by arrow at C in Fig. 2. When the voltage available for charging has passed its peak value and starts to fall off, instead of following the dotted curve shown, the voltage will be maintained to a certain extent, by the energy stored in C_1 which is ($\frac{1}{2}$ $c.e^2$). The voltage across the condenser C_1 will, however, fall off at a rate determined by its capacity, for one thing. ($e = e_0 \cdot \epsilon^{-\frac{t}{CR}}$ — where e is the value of the transient voltage at the datum time, $t = 0$). Thus if the capacity C_1 is large,

*Consulting Engineer, 61 Sherman Street, Malden, Mass.

†Director, Customers' Service Laboratory, Raytheon Mfg. Co., Cambridge, Mass.

the voltage across it will not have fallen greatly before the next half cycle

The final result is that as C_1 is increased (thus decreasing the impedance) the magnitude of the a.c. ripple in the tube output is also decreased as a result of the increased filtering action of the larger capacity, so

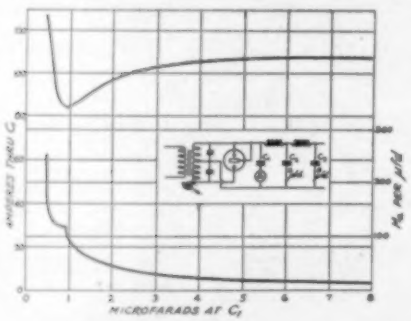


FIG. 3. MEASUREMENTS TO CONFIRM THE CONCLUSIONS OF FIG. 2

The upper curve shows the relation of the current thru C1 to the capacity of that condenser, showing that the tube load does not increase especially beyond 3 μfd. and not at all after 5 μfd. The lower curve shows the same thing converted into milliamperes per microfarad, showing that the strain on the condenser is not decreased greatly by increasing to more than 3 μfds. The measurements were made on a Raytheon "B sub", but other or larger systems give similar results, though the shape of the curves may vary.

that one change about offsets the other and the load on the transformer and rectifier is not changed to any noticeable extent. Measurements confirming this are shown in Fig. 3.

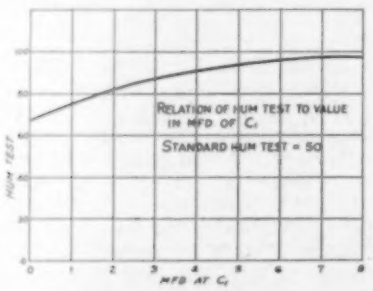


FIG. 1. TYPICAL RECTIFIER FILTER SYSTEMS NOT LARGE, THAT BEING MAINLY CONTROLLED BY THE TWO CHOKES AND C2

Thus we finish with the first point that we want to bring out in this brief paper—namely, that increasing the size of the initial filter condenser does not increase the load on the rectifier tube or power transformer.

But, granted no harmful effects will be introduced, is anything to be gained by increasing the value of condenser C_1? Yes, the percentage of ripple in the output will be reduced, the final d.c. output voltage will be increased and the slope of the regulation curve will be less steep as C_1 is increased within certain limits.

The curves in Figs. 2, 3 and 4, indicate these facts quite clearly. They show the rapidly decreasing beneficial effect as the value of C_1 increases above the value so much used in present day high grade B-supply units i.e., 2 μfd. Where very complete filtering and maximum voltage output

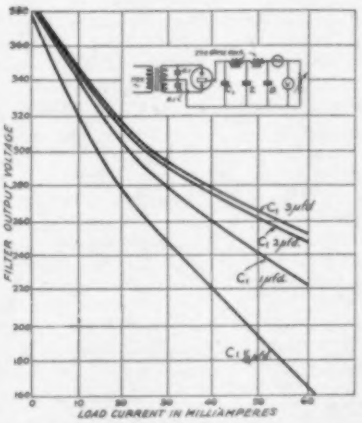


FIG. 5. ONE OF THE MOST IMPORTANT EFFECTS OF INCREASING C1 IS TO CAUSE A VERY GREAT IMPROVEMENT IN THE REGULATION, THAT IS TO KEEP UP THE VOLTAGE BETTER WHEN A LOAD IS PUT ON THE FILTER

In the example shown here a Raytheon tube is used but the same effect is found with any rectifier, though not always to the same extent. To find the effect of using different capacities one reads up across the curves, thus at 40 milliamperes a change from a C1 of ½ ufd. to 2 ufd. raised the voltage from 220 volts to 275 volts.

for a given a.c. transformer voltage and type of rectifier tube are desired, as in the case of the 350 m.a., A B C units using rectifier tubes such as the new Raytheon BH, for it will be seen from the curves that increasing the value of C_1 to 4 μfd. will be of some slight advantage.

Now to recapitulate: Above a critical value the value of C_1 has no appreciable effect as an a.c. load on rectifier. Increasing C_1 within limits, improves regulation, increases output voltage, and reduces percent. ripple in output current.

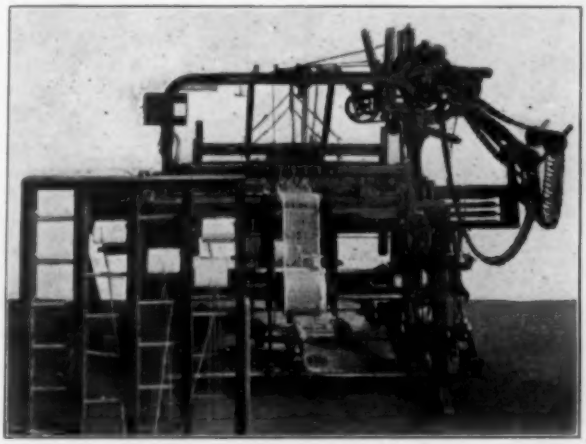
Note—Since the first condenser seems mainly to control the regulation one naturally wonders what C2 and C3 are for. Dellenbaugh states the rough working rule that C2 controls the filtering (supresses the ripple) and C3 controls the tone quality in the case of reception or the goodness of modulation in the case of telephony. The effect of C3 is reasonably evident since any sudden demands on the filter (even at speech frequencies) must be supplied from C3. If that capacity is too small these things suffer. The functions of the three capacities naturally interlock and if the filter has but two condensers they become entirely confused.—Tech. Ed.

Ohm Spun

By Robert S. Kruse, Technical Editor

THIS isn't a funny story, even though the title does look like a pun. Instead, it is the story of a most interesting electrical product that is made just around the corner from the *QST* office at 19 New Park Avenue. For some time we have been meaning to go over to ask just how The State Company made Ohm Spun, and a few days ago Westman made the necessary arrangements, and here is the story.

Ohm Spun is a woven resistance material that can claim to be somewhat out of the ordinary, even with the present variety of black, brown, green, purple, blue, white and orange resistances. The warp of the weaving is of asbestos thread and the woof is of resistance wire. As can be seen from the photographs and Fig. 1, the asbestos threads run in pairs, taking a half-twist to the right between one pair of resistance wires and a half-twist to the left between the next pair, thereby holding the resistance wire from slipping. The advantage of such a construction is that the wire is supported by a minimum of material and the resistor is therefore light, while the zig-zag arrangement of the wire keeps the inductance quite low, which is important for a.c. work. At the same time the spacing between the successive "picks" (traverses) of the wire is not so small as to introduce excessive distributed capacity. Since the resistor is metallic it is possible to make it of a wire that has a very low temperature coefficient of resistance, that is the resistance doesn't change much when the wires become hot.



THE OHM SPUN LOOM

The asbestos warp thread is received in rolls of which four are shown on the rack at the left front. When this rack is filled many threads may be taken from it at once and wound together on a sort of warp-supply drum which is then placed at the back of the loom. The warp threads are then passed thru the heddles and led to the receiving drum at the front of the loom. When the driving motor is started the receiving drum slowly draws the warp forward thru the loom. Roller links on the chains at the right operate the heddles to raise and lower the warp threads to permit the shuttle with its resistance wire to be thrown back and forth between them. The resulting web of wire and asbestos may be seen emerging from the loom and going to the receiving drum.

THE PROCESS OF MANUFACTURE

That is getting somewhat ahead of the story. To begin at the beginning, the material is woven on a loom that is not unlike a ribbon loom. The asbestos warp enters from spools as shown in one of the photographs and has the resistance wire woven in by a shuttle passed thru in the usual manner. The warp threads are raised and lowered and moved sidewise (to give the twist before referred to) in the usual manner by heddles whose motion is controlled by rollers carried on links of a chain which are fed mechanically under the ends of levers connected to the heddles. Beyond that I had better not go with the explanation, for weaving is more or less of a mystery to me.

At any rate, there emerges from the loom a long asbestos-and-metal ribbon. A glance shows that at intervals the resistance wire has been interrupted and ordinary enameled copper wire used for an inch and a half or so, also that at the dividing point between the resistance wire and the enameled copper wire there has been laid in a stranded and tinned copper wire. A length of the ribbon is now stretched out flat and painted with a sort of asbestos-paint paint which stiffens the rather "floppy" ribbon after which it is cut apart at the center of the enameled-wire strips. (See Fig. 1.) Each piece now consists of an area of resistance wire, bordered by a stranded copper wire beyond which is a ¾" strip of enameled copper wire. The ends of the resistance wire are now twisted around the stranded wire and both are soldered to the metal mounting strips. The enameled-wire part of the strip is only a little stiffener and is presently folded inside a little sheet-metal

channel to which the stranded wires are soldered as just mentioned. The whole thing is now crimped onto some mica strips by means of little ears on the metal strips and in turn other metal channels are crimped onto these mica strips. These

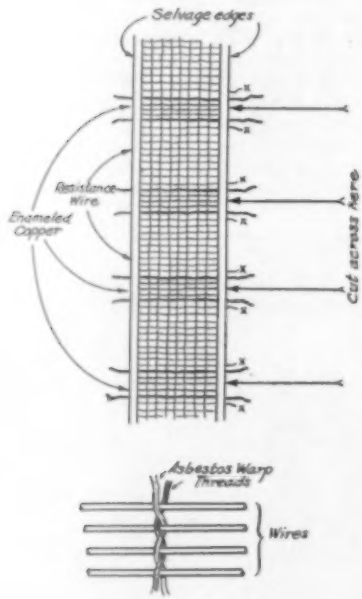


FIG. 1. THE WEB AS IT COMES FROM THE LOOM IS CUT INTO LENGTHS AND STRETCHED OUT IN LENGTHS

The ends of the resistance wire sections are now soldered to the stranded leads. The entire web is now "doped" with an asbestos stiffener and then cut apart as indicated by the long arrows. The units are now ready to be mounted.

other, and outer metal strips are also U-shaped, face away from the resistor, and serve as guides to hold the unit—for it has now become a resistance unit—in a rack.

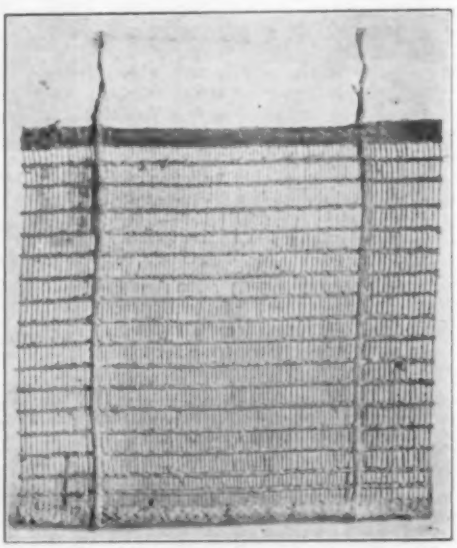
THE RESISTANCE RACK

Such units as have just been described are made in resistances of 220, 110, 55 and 44 ohms. Other values can be made up easily enough within limits, and if one does not care about the zero temperature coefficient, a range up to 440 ohms is possible thru use of different sorts of wires. Still higher resistances are possible in larger units which are usually tapped. The odd-looking values mentioned were taken for a particular reason, the fact that at 110 volts they will pass ¼, ½, 1, 2, and 2½ amperes. Naturally, two of the 44-ohm units in parallel will pass 5 amperes. Thus if we arrange a system such as that of Fig. 2 we can by throwing the switches get any current from ¼ ampere to 10¾ amperes in steps of ¼ ampere. Notice, however, that this is strictly true only if the voltage is really 110 and there is nothing in series except some low-resistance thing such as the ammeter shown in the diagram. Usually it isn't an ammeter but the current-coil of a watthour meter (house meter) which is being tested, for these grids were originally devised for that purpose.

For most purposes it does not matter if the current steps are not exactly ¼ ampere, as long as they are alike or reasonably so. If one isn't even worried about equal steps but would rather have the greatest possible range one can always use such a connection as that shown in Fig. 3, which of course applies to any sort of resistance unit *provided* that each unit can stand being put directly across the 110-volt line.

SOME RESISTANCE USES

Anyone who is in the power distributing or meter-testing "game" does not need to be told of the uses of resistance racks. In radio we are inclined to use very makeshift devices—and not to do it very intelligently at that. For instance we sometimes use a back-contact on the key as an anti-flicker



AN UNMOUNTED "OHM SPUN" UNIT AFTER BEING PAINTED WITH THE ASBESTOS PAINT.

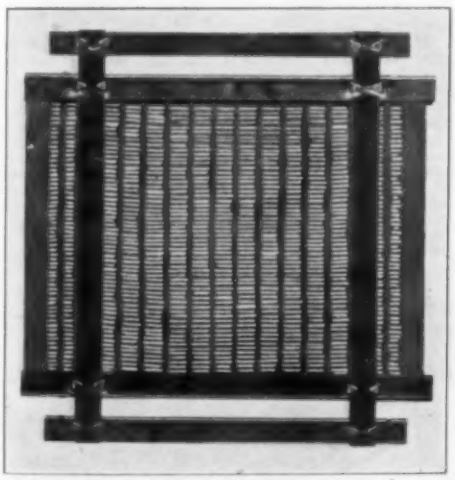
device, but every time the transmitter adjustment is changed the flicker-resistor must be changed too. Now it isn't necessary to use an ohm-spun resistor but some such circuit arrangement as that of Figs. 2

or 3 allows the necessary load adjustment to be made promptly.

The separate units that we are in the habit of using are frequently such that their resistance changes in going from d.c. to even 60-cycle a.c.—and one is never quite sure which the maker marked them for. It is convenient to have a resistor that does not mind such changes.

The resistors may be—and have been—used as "dummy" or "phantom" antenna resistances, though one would need to take some care at short waves that they did not have a tuning effect. At long waves they appear to be free from it.

In the higher-power transmitters satisfactory grid leaks are not always available. Thus for instance, in a 1-kilowatt "job" one might wish to have a grid leak of 1200 or 1300 ohms. This can be obtained (nearly) by putting 4 of the usual tubular wire-wound leaks in parallel but as they are



A MOUNTED UNIT

The black cross-trips are of mica. The outer metal strips drop into guides in the rack, the inner ones carry the unit itself and are crimped over the enameled-wire section thereof. At the top and bottom may be seen the closely woven asbestos selvage edges of the resistance web. In some types the flexible leads come out separately.

rather highly inductive any r.f. voltages getting at them tend to cause high losses at the "hot" end with the rather frequent result that this end overheats and blows up, from which comes the common and unjust suspicion that the large blue gridleaks are over-rated. With a less inductive construction the thing is less likely to happen, which is the reason for the use of Ohm Spun in the gridleak systems of some large transmitters.

"PHANTOM" LOADS

It isn't in the least radio but one can hardly avoid so interesting a thing as the

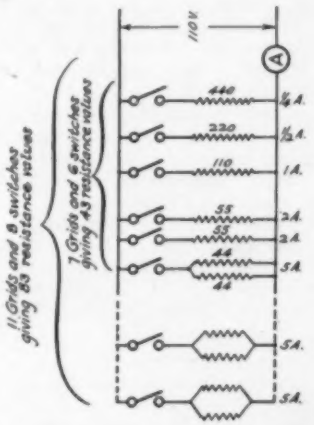
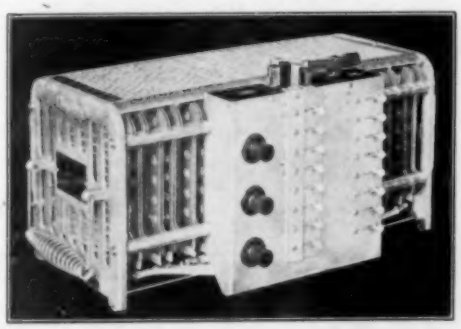


FIG 2. DIAGRAM OF AN OHM SPUN LOAD RACK

With the part shown in solid lines it is possible to get 43 resistance steps from 9.35 to 440 ohms. At 110 volts these steps will give a variation from ¼ to 10¾ amperes by ¼-ampere steps. By adding the two steps shown dotted the range is increased by 40 additional steps to a range of ¼ to 20¾ amperes, or 440 to 5.35 ohms.

"phantom load" made by the States Company for watt-hour meter testing.

As you know, the electric meter in your



AN OHM SPUN LOAD RACK

This unit is arranged for currents from ¼ ampere to 20¾ ampere in 83 steps of ¼ ampere each at 220 volts. This is when using the top and bottom binding posts and with the top switch to the left. By throwing the top switch to the right the internal connections are changed and the left column of switches is unlocked. The same range of currents is then available at 110 volts, using the top and center binding posts—or else current half as large may be gotten at 110 volts by using this connection and the top and bottom binding posts.

house is occasionally tested by the electric light company to see that it isn't over-

charging you. As a matter of fact most meters *undercharge* the customer a little, especially after they have run for a time. Now to make the test one sets down a standard meter alongside the meter to be tested, and then sends the same currents thru both meters, observing how much the house meter misses agreement with the "rotating standard."

The ordinary house meter is a curious sort of compound motor (it is actually a small induction motor if it is an a.c. meter) which has a "voltage coil" and a "current coil" as shown in Fig. 4A and is so built that it runs in proportion to the voltage *across* the line and in proportion to the current *in* the line; in other words in proportion to the current thru the current coil A and in proportion to the voltage across

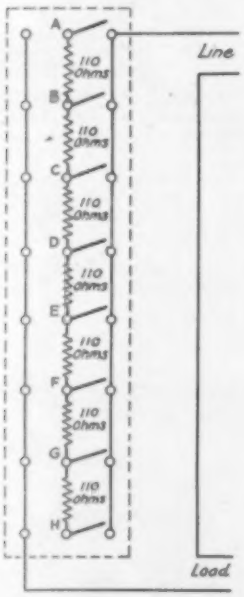


FIG 3. A CIRCUIT GIVING A LARGER RANGE OF RESISTANCES WITH ONLY ONE SIZE OF UNIT

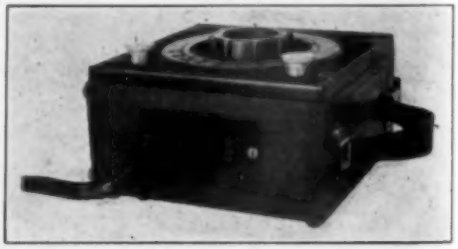
Like the diagram of Fig. 2 this insures that no unit will be hurt as long as no more than 110 volts is applied, no matter how the switches are set. The range is from 6.28 ohms to 770 ohms if one uses seven 110-ohm units. There are 28 steps—not equal. The range can be pushed up or down by the use of other units—220 or 440 ohms for higher resistances, 55 or 44 for lower resistances. More steps can be obtained by using more units, the number rising rapidly with the added units.

the voltage coil V. In a.c. meters this is complicated by the "power factor" but we will calmly drop that out, though there is a special device to take care of it in both the meter and the test equipment.

Suppose now that we wished to test the meter of Fig. 4A to see if it is right. The thing one naturally thinks of is to connect it with the "rotating standard" after the fashion shown in 4B, with the same voltage

INTERNAL AND EXTERNAL VIEWS OF A "PHANTOM LOAD."

The principle is shown in the diagram of Fig. 4C. The only important addition is that the fanswitch operated by the knob picks up resistances so that the current thru the current coils is varied thru the range of the device, which is made appropriate to the meters to be tested.. In the one here shown the currents available are .1, .2, .5, 1, 2, 5, 7½, 10 & 15 amperes. The internal view shows the step-down transformer, the fanswitch and also the "doghouse" at the back of the instrument in which the small resistances are mounted. Some of the switching schemes involve 5, 8½ and 10 volts, other ranges use only one or 2 of these voltages. The exterior view shows the 110-220 volt connections to the tapped primary.



across V1 and V2, the same current flowing thru A1 and A2, the current being adjusted by changing Ra so that one may make sure of the meter errors at different loads.

This will work—but it is a horrible thing for the test man. Suppose that the meters are 10-ampere, 110-volt affairs. This means that Ra must use up 10 amperes at 110 volts, which is 1100 watts! This means that the resistance is big, and after the test it is hot.

Now a well-known old dodge for getting around this is shown in Fig. 4C. Here V1

and V2 draw current from the line as before, but they take a very small current. The current for the current coils is provided by a transformer with an 8.5-volt secondary and when 10 amperes are being drawn from it the result is only 85 watts, so that the resistance can be both smaller and cooler, because it has to get rid of about 1-13th as much heat, though the meters are running as fast as before.

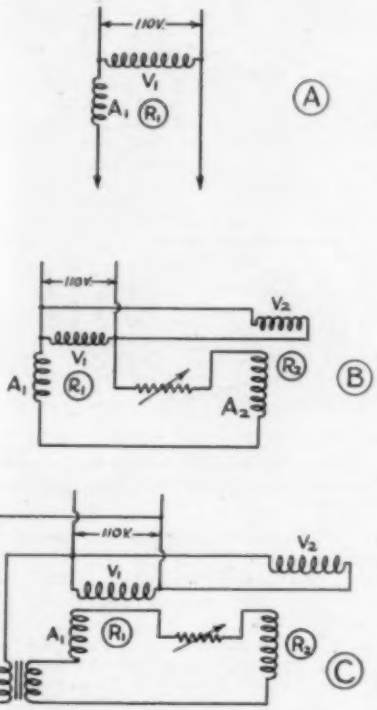


FIG. 4. METER TESTING CIRCUITS
A is the basic diagram of a watthour meter. B is a simple test diagram. C is the test diagram used with one type of the "phantom load." In all diagrams V are voltage coils, A are current coils and R are the rotors of the meters. Ra is the load resistance in each case where shown.

A device to do this thing, and known as the "phantom load" is well known in power circles but is probably news to *QST*'s readers and is therefore shown in one of the photographs.

Strays

If you are using a rope halyard to hold the antenna, 9CEI suggests your putting a spring in the "circuit" to take care of the shrinkage during wet weather. He overlooked this with the results that a guy wire broke and the whole works came down.

The Elgin Observatory of the Elgin National Watch Co., at Elgin, Illinois, has recently installed a short-wave transmitter for the broadcasting of time signals.

The call is WNBT and the transmitter is crystal controlled, having an output of 500 watts. They are working on a frequency of 8950 kcs.. (33.5 meters) and the wave is checked by two very accurate wavemeters and may be used for the calibration of amateur wavemeters.

Time signals are sent from 11.55 a.m. to 12.00 noon and from 11.55 p.m. to 12.00 midnight Central Standard Time every day except Sunday.

Mrs. 6APA has been long enough in the radio game (by proxy) to be able to get the significance of an SOS, and put it to good use. A few days ago, she was shopping and parked her car in a perfectly good place, only to find when she was ready to go home that she was blocked front and rear and alongside as well. No one near could tell her who had left any of the three cars and time was pressing; she had left two babies at home. She stepped into the car, sounded an SOS on the horn and while she was wondering if anything would happen, it began to happen right then by the arrival of four young men running in from four different directions, in various stages of out of breath, but all ready for what might be next on the list of events. Another touch on the horn; dah dit dah dit dah this time, and they were at the car doors. Brief explanations, the obstructions pushed to one side and she was on her homeward way. Meantime the street was wondering what it was all about. Some of them haven't got it yet and what is more they never will; it is beyond them, this amateur spirit.

Northwestern Division Convention

Sept. 2-3, at Hotel Dessert, Spokane, Wash.

THE Radio Operators' Club cordialiy invites all radio amateurs to the Second Annual Northwestern Division Convention to be held at Spokane, Washington.

Communications Manager F. E. Handy of A.R.R.L. Headquarters is making a special trip to this convention and we know you will all want to meet him. Howard Mason, formerly of *QST* staff will be with us and other good speakers on technical matters have been lined up.

Write T. W. Baird, President, Radio Operators' Club, 534 Park Place, Spokane, Washington.

Experimenters' Section Report

THE well worn Standard Dictionary on my desk designed, as it explains, "to give the Orthography, Pronunciation, Meaning and Etymology of about 83,000 Words and Phrases—" has failed miserably to disclose any words which could aptly describe the "pep" on the part of Experimenters' Section members evidenced by the results of the recent questionnaire. Under "enthusiasm," it does say, "Against the hindrances of the world, nothing great and good can be carried out without a certain fervour, intensity and vehemence; these joined with faith, courage and hopefulness make enthusiasm."

We are not certain whether the Experimenters' Section is accomplishing anything "great and good" but it is clear to us now that its members have all the necessary dictionary-dictated qualifications. Which conclusion, in itself, has justified the questionnaire.

Fifty-five per cent. of the returns, however, in addition to providing indication of the individual writer's enthusiasm, give voice to the statement "that the X Section could be improved or the work made easier for the members if greater coöperation was forthcoming from fellow members." These returns would seem to indicate that the development of inter-member correspondence is one of the most formidable of the X Section problems.

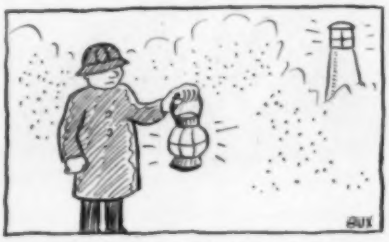
It must be admitted that this is a curious and unexpected condition but, since more than fifty per cent. of the live members are sufficiently concerned to comment, the

HIS FIRST ELECTRICAL EXPERIMENT

condition obviously must be a healthy one. I can only suggest that members who have been disappointed in the past should make a second attempt at correspondence with fellow members. The returns indicate that the chances of having letters answered are at least even!

But seriously, the point is one of the greatest importance. The X Section work can advance only if continuous and complete inter-member coöpertion is secured. After all, the X Section was formed to make that possible.

Eleven per cent. of the returns claim that the X Section should be organized in a manner similar to the Communications Department. It is clear that the majority of the members realize how impossible is



WE'RE BEGINNING TO FIND OUR WAY

that beautiful dream but it is desirable, perhaps, to point out that the Communications Department requires the full time of three people working at full pressure. The Experimenters' Section, deserving though it may be, is not allotted the full time of even one person, but must sit and wait for that yet-to-be-discovered time when Kruse or I find a week-end not filled to overflowing with loose ends left over from our week-day work. Never let it be said that our imaginations never run riot—that we never visualize the heaven that a truly organized X Section would constitute.

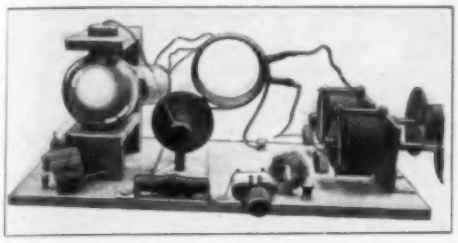
The outlines constitute a further important point of contention, the fairly general cry being, "I am interested in Problems T30 and A12 but I can't do much because there isn't enough information in the outlines." This tone would indicate that many members view the Section as an educational institution of some potential value. The outlines, which they seem to consider as something in the nature of text books, apparently are depended upon to provide detailed instructions for some interesting experimental work. Which attitude, of course, indicates a rather complete misunderstanding of the aims and objects of the Section.

The Section and the problems exist for the very reason that there are many matters about which none of us know very much, if we could write complete outlines the problems would have no justification for living.

Apart even from this consideration, it is clear that elaborate outlines would be

a distinct handicap since they would have the immediate effect of directing effort along the narrow channels visualized by the author of the outline. So long as a general statement of the problem is made we believe it desirable to avoid influencing whatever unbiased and original thought may exist.

Precisely seven per cent. of the returns contained the undecorated statement, "I do not know of any way in which the X Section could be improved." We can't help wondering whether we really have some understanding minds in our midst or if we are just having our legs pulled!



THE TRANSMITTER USED AT 9EHT BY NORVELL DOUGLAS

This transmitter using an 852 75-watt series-tuned ultraudion circuit was at the Kansas end of the 360-mile 5-meter circuit. Unfortunately, the Missouri station was dismantled by its owner, Herbert Clark, before photographs could be obtained.

Space forbids a discussion of the scores of other suggestions and comments resulting from the questionnaire but there is at least room enough to say that we have taken them all to heart and that they will influence very greatly the future conduct of the Section.

—*R. A. H.*

THE 5-METER C Q PARTY PRODUCES A PUZZLE

As we hinted in the last issue of *QST* the 5-meter international test produced a very interesting and puzzling result—a brand new freak.

Recall first that the tests from 1OA and 2EB (especially the latter) were finally being copied with about 55% reliability at distances around 1000 miles. This compares rather well with what one would expect at such distances from some of our other waves.

Furthermore—which has not been said before—there existed for weeks a perfectly airtight contact between 9EHT at Lawrence, Kansas and Lutesville, Mo. The first station was operated by Norvell Douglas and its equipment is shown in the photograph. The sending antenna was a 3/2-wave horizontal antenna about 70 feet above the earth and fed at its center by a vertical two-wire line. The Missouri station was operated by Herbert Clark. It employed a transmitter with a circuit similar to that at 9EHT but with a normal 50-watt tube and a simple antenna, the receiver being a regenerator with an audio amplifier. This excellent contact at such a distance as 360 miles was most encouraging.

THE WEATHER OR THE WAVE?

Now judge our surprise when such consistency was followed by an almost 100% failure on the part of *everyone* to hear anything except locally during the 5-meter tests of June 11, 12, 18 and 19. This must indicate one or two things, either that the contacts mentioned above were pieces of rare *good* luck or that the results of the June tests were pieces of rare *bad* luck.

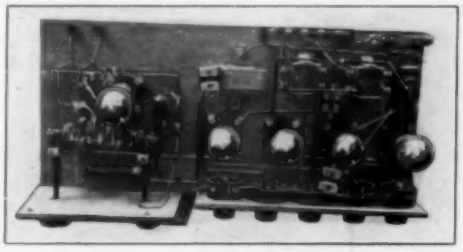
Here is a possible answer to the puzzle. During the tests two tuners were used at 1OA most of the time and 20-meter listening was done at short intervals. *Almost nothing was heard in the 20-meter band.* Even such signals as those of PCRR and 2XS were weak and very wabbly. Something like 25% of those reporting on the test have commented that they did not expect much, as the 20-meter band had been poor for a day or so ahead of the tests.

A decent audibility meter has not been available but a makeshift affair at 1OA has shown that for ten days or so after the tests the 20-meter band did not seem back to normal.

We have then two possibilities, that both 20 and 5 were caught in some unfavorable weather combination or else that the former results were mere good luck. To find out which is the case, more widespread tests are necessary.

GENERAL ENTHUSIASM

Many reports have been received and are still straggling in from distant parts of the world. Notable among the reports received are several which give details of independent tests and these will be reported in the next issue, by which time certainly the very last report should be in.



THE RECEIVER THAT WAS USED AT 9EHT

This receiver is an autodyne detector followed by I. F. and audio amplifier, in other words, the superheterodyne arrangement.

(Concluded on Page 43)

A Time Slide Rule

By Oliver Wright*

I HAVE a little device that you may find interesting. It is a sort of circular slide rule for time and dates in different parts of the world. As far as I know it is entirely original with me but if I am guilty of stealing somebody else's thunder I'm sorry.

On my Oriental run some method of coördinating the different times with each other and with G.C.T. was absolutely necessary in order to get the Time, Weather and Press schedules and I devised this for the above purpose. Later I discovered that by applying a little rule-of-thumb formula it was possible to also get the date directly. We will deal with time first, however, as it is read directly and is practically self explanatory.

You will note that there are two discs, "A" and "B". I shall refer to them by those letters to save time. In the first place it is necessary to center them and put a pin through the holes. If carefully made on drawing paper and backed with cardboard it makes a very handy little device to have around the station for making international schedules and checking QSL cards.

To start with it would be well to describe each disc separately so that you will get an idea of how and why it's built as it is. The outside disc "A" has two rows of figures on it, the outside being G. C. T. and the inner simply numbering up to 12 twice. It is convenient to put in half hour marks too but I didn't bother in this rough sketch. Also, shading the p.m. section, or putting it in red ink enables one to see what it is at a glance. Notice also that I say G.C.T. and not G.M.T. which is out of date.

Now let us consider the smaller disc "B". I have bisected it with a heavy line, put G.C.T. at one end of it and 180 degrees at the other. Now as we all know sun time changes one hour for each fifteen degrees of arc. Therefore, Chicago time, which is six hours behind G.C.T., would naturally be 6 x 15 or 90 degrees behind. That places it automatically at right angles to the dividing line as the entire circumference takes in 24 hours. Similarly, Los Angeles time being still earlier by 2 hours is 30 degrees farther in a counterclockwise direction. As you will notice disc "B" is divided into two hemispheres, and all cities fall into either the Western or Eastern hemisphere just as they do on a map; those nearest London being nearer on the disc etc.

To find local time from a given G.C.T. simply set the G.C.T. mark on the given time and read the local time directly at its mark. Let us take an example. Set the G.C.T. mark at 00 G.C.T. Then by direct reading this is 6 p.m. Chicago time or 9 a.m. Tokio time. If we in Tokio wanted to find what time it was in New York at 6 p.m. Tokio time we would set the Tokio pointer at 6 p.m. and read 4 a.m. for N. Y. time. Simple!

DATES

Now to read dates. There is one rule that holds for stations in the Western Hemisphere, checking up on stations in the Eastern Hemisphere and another for the reverse, also a third for stations in the

*S. S. *Volunteer*, 784 S. Molino Ave., Pasadena, Cal., also ex 6GD and 6BKS, Phonix, Arizona.

same hemisphere. It might be possible to combine them all in one general rule but I believe it would be more complicated so I shall give you the three methods I worked out.

Let us take a concrete example; for instance, an operator in Los Angeles works a station in Tokio at 11 p.m. P.S.T. on June 10. Then the slide rule shows that it will be 4 p.m. Tokio time. The next thing is to find whether it is *today* or *tomorrow* in Tokio, that is June 10th or 11th. Now with the rule all set we run our eye around it in a *clockwise* direction *from* Los Angeles *to* Tokio. If at any point in that space the Midnight mark on disc "A" is encountered it is *tomorrow* in Tokio, i.e. June 11th. If the Midnight mark is not encountered in this space it is *today* in Tokio. For example: Suppose the Los Angeles station works the station in Tokio at 1 a.m. P.S.T. June 10th. Then the Los Angeles operator will know from the slide rule that it is 6 p.m. June 10th Tokio time.

Let us work from the Eastern Hemisphere back to the Western. Suppose the operator at the Tokio station is doing the figuring. He works the Los Angeles station let us say at 9 p.m. June 15, Tokio time. He wants to know what time it is in Los Angeles and also what the date is. He sets the rule to 9 p.m. Tokio time and finds at once that it is 4 a.m. in Los Angeles. Now for the date. He reads around disc "B" from Tokio to Los Angeles in a *clockwise* direction. Notice that it is always clockwise from the local station to the distant station. If any place in that path the midnight mark is encountered it is *today* in Los Angeles, in other words June 15th. It would be 8 a.m. Los Angeles time, and since the midnight mark is not encountered between the two, in a clockwise direction from Tokio to Los Angeles, it is *yesterday* in Los Angeles, i.e. June 14th.

Now to find the difference in dates between two stations in the same hemisphere. Consider that half of the disc "B" and disregard the other half altogether. If the midnight mark does not come between them, within that semicircle, they are both *today*. If, however, the midnight marks comes in between them the one to the right is one day ahead of the one to the left, or inversely, the one to the left is a day behind the one to the right.

All that sounds quite difficult but it really isn't. Try it yourself a few times and see how simple it really is. When checking QSL cards, however, in which the sender gives his own time and date, care must be taken or there will be errors. Pretend that you are the sender and check from his standpoint. A little practice and you can work it very rapidly.

There are many little improvements that you may find will help such as different size, physical construction, lettering etc. but the essentials are all embodied in the simple device shown.

Experimenters' Section Report

(Continued from Page 41)

Meanwhile, there is remarkable agreement on the desirability of more tests—both local and long distance. The local tests are of course up to the individual, the long-distance or international tests are now under way. The Reseau des Emetteurs Francais announced some August test but

unfortunately did so weeks after it was possible to make the announcement thru *QST*. Bulletins were hastily gotten out to the Ex. Section and to the A.R.R.L. b.c. stations. The results will probably be rather thin from the U. S. and this explanation is accordingly offered. The R.E.F. has been cabled a request to repeat the test, giving us 65 days' warning so that everyone may not only be notified but be able to get ready as to both apparatus and time.

Meanwhile some rather limited 24-hour tests will be run between a small group of stations in the U. S. A., more or less offhand during the first days of August.

ANOTHER C Q PARTY

In another place in this magazine there is announced another international test, supposedly so laid out as to avoid the mistakes of the first, or June, test. It is to be hoped that we will be able after that test to widen out the territory considered and to include waves in other parts of the 5-meter band, in addition to the 4.9 to 5.1-meter region. For this test, however, the territory remains the same so as to tie it to the June test and possibly explain the results of that test.

—*R. S. K.*

A RADIO CALL

I.A.R.U. NEWS

TIME SIGNALS

TIME signals from the United States Naval Observatory at Washington may now be heard on five different wavelengths which should make them available to almost everybody in the world. The waves are 24.9, 37.4, 74.7, 435 and 2650 meters and the signals are sent at 12 noon and 10 p.m. E.S.T. or 1700 and 0300 G.C.T. It will be noted that the 37.4- and 74.7-meter waves are just below the so-called 40- and 80-meter U.S. bands. After you have checked your time-meter, take a reading on your wavemeter so your schedules will be correct in both of these details. Once more we are making the statement that there is *no* excuse for "nu" stations being below the band.

AUSTRIA

"All QSL cards for Austrian amateurs are to be sent only via "Radiowelt, Vienna III., Rüdengasse 11". All cards are sent to the respective amateurs without any charge. Please note that the "Radiowelt" is a periodical written in German, with special pages devoted only to short-wave work, and is read not only in Austria but also to a great extent in Serbia, Czechoslovakia, Roumania, Poland, etcetera. All QSL cards for the last mentioned states may also be sent via "Radiowelt".

"In Austria, there are now over one-hundred active amateurs (all non-licensed; please send all cards under cover!) mostly working QRP although several are using powers up to 400 watts and are working regular schedules with Australia, U. S. A., etcetera.

"Austrian calls consist of the intermediate "ea" followed by two more letters. They should not be confused with the Spanish "ear" calls. It is hoped that official licenses will be granted soon. The officially recognized organization of Austrian "hams" is the "Oesterreichischer Versuchssenderverband, Ing. Col. F. Anderle, President". Lists of "Calls Heard" should be sent to 'Radiowelt, Wien III., Rüdengasse 11, Austria.' "

—Dr. Monig, eaAC

BELGIUM

We quote from a letter of Paul de Neck, President of the Resau Belge.

"Belgian amateur operations are showing considerable activity and numerous DX stations are being worked. Many of the transmitters make use of the "Levy" type antenna which is the ordinary half-wave

ac8GG AT SHANGHAI

Hertz with a double wire, current-feed system. Among the others, the Zeppelin type with its two-wire voltage-feed, is very popular. Results are very good with both systems.

"4CK, who is one of our best traffic men, and who takes messages for any and everywhere in the world, has been appointed the first Official Relay Station.

"It would be tedious to give all the results that have been obtained by our stations, but amongst the most active are: 4BL, 4XS, 4CB, 4KB, 4QQ and 4AC."

CHINA

"Please warn all amateurs to send QSL cards under plain covers to hams in China. Our position with the many so-called Chinese governments is rather precarious at present and several amateurs in Shanghai have had to close down. For the same reasons, I think most of us will not be willing to give our QRAs thru the air. If any amateurs who wish to QSL our signals and do not know our QRAs, will send their

(Continued on Page 74)

The Communications Department

F. E. Handy, Communications Manager
1711 Park St., Hartford, Conn.

On Traffic Procedure

By John Labaj, 8BFA

FIRST, I QSO some fellow who sez, "R6 stdy FB". After I chew the fat with him for a couple of minutes at fifteen per, the brother hands me a couple of messages going on this fellow's direction. I ask "QSR? QRV? QRK?" and he comes back with "Sure but pse QSZ". *&$*%!

If this fellow could read me before when sending single why ask for a QSZ and show his doubts in his own ability to believe his ears? It seems to me a very bad habit of many of the gang to send double unnecessarily and to expect to waste time in copying double. There is in my opinion no time for a QSZ in ham work because there can be no time when a man can copy double that he could not make better copy of the same thing sent once and perhaps sent slower. A good op. calls for a QRS whenever necessary. A number say QRM PSE QSZ. I have never seen the time when if QRM was bad enough to break single copy it was possible to get it by sending double. Even in commercial work the only use of QSZ is in bad rule). What really is the cause of asking for QSZ is the QRN (and QRN is less bothersome on short waves as a fact that an op cannot copy solid at the speed being used under existing conditions. Rather than be honest and say PSE QRS (which is no disgrace to do) he asks for QSZ and trusts he can get it the second time if he misses the first. Therefore, QRS GLADLY, QSZ NEVER!

Second, I finish sending a message and the op comes back, "OK OM but pse give me the text agn." Brrr. All he needed to say was TEXT? to let me know he wanted this part again. Also he should never say OK until absolutely sure it IS OK. On one occasion I sent a message with check 40 and purposely left out a sentence. The other op came back, "R R R R R R".....another mind reader.

When one finishes a long message such a bird comes back, "I did not get the first part of the message. Please repeat the first part." Blah! How in tarnation am I going to know what HE considers the first part of the message? All he should have said is "PSE ALL B4....(and the first word correctly received) K" to save my time and temper. Or if the last part was missing why didn't he come back, "(last word correctly received) ?? END K" to get what he needed and not the whole message as a number of lids are in the habit of doing.

Well, I finally got my hook clear and he digs up a few for me and I say, "K". All is lovely until in sending the adx (address) he sends, "John ..ler 213 East" and the rest of the message is OK. I go back at him, "John ?? 213 K" and by the great horn spoon he comes back (sending double after I begged him to send single) like this: HR HR MSG MSG NR NR .... etc. Not being able to break him successfully I fume until he hits the address, get the fill which turns out to be "Keller", and then promptly get a *QST* from the shelf and make use of the half hour while he is getting through. This happens so many times that it seems as though there were hams unaware of the proper use of ?? when asking for fills. Suppose the partial text of a message reads, "Please come home and ..... cat which is .... all the rest .... well stop will look for you regularly on schedule starting after the new ye .... stop end (sig) George". Instead of asking for a QTA on the whole message it saves much time to say, "BT AND ? CAT BT IS ? ALL BT REST ? WELL BT NEW ? STOP BT K". ? means *missing* and the break sign may be used as a spacer between the several fills that are necessary to keep from mixing them up.

One poor practise is the using of a break sign by some amateurs in the body of the message. While sometimes used for paragraphing press reports it is standard practice to use it between the preamble and the address, between the address and the text, and between the text and the signature. When so used TO and SIG may be done away with entirely. I hope that these suggestions although old in practise may be found of value to A.R.R.L. operators and result in making each QSO snappier and more pleasant.

— - - - —

The old Morse "4" ("4" is the same in Morse and Continental), meaning "please start me, where?" should prove useful in our message handling work when directions for a fill are missed. Try it, OM!

More on Proper Procedure

By John H. Webb, 4NE, Florida Route Mgr., A. R. R. L.

ONE practise much in need of standardizing in ham-land concerns the use of QTC and QRU. Instead of a long drawn out agony of "I have a msg hr for ur way OM" why don't the gang use QTC, meaning the same thing, "I have some traffic for you"? Instead of QTC NIL a simple QRU is to the point and shows the other fellow that you know the right meaning of the Q abbreviations. There is no meaning assigned to QRU? so why not be correct in saying QTC? when that is what you really want to ask?

I venture to say that 98% of the new fellows that come on the air use "AR", "K", and "SK" indiscriminately after a CQ or after calling another station (at a scheduled hour) that they haven't yet heard on the air. The proper use of these signals is very helpful in making it possible for anyone listening to know what you are trying to do so he may choose the proper time to call you.

Use AR at the end of a call or between messages (it stands for the end of a message or transmission.)

Use K at the end of each transmission *when answering or working someone* (it means "go ahead").

Use SK only when signing off. It means, "I am absolutely through working you for this time and am now going to listen for other stations who call me."

Beginners may find clear examples of the proper use of these signals on page 122 of *The Radio Amateur's Hand Book.*

Contact With Expeditions

FROM the snag of reports received at A.R.R.L. Headquarters it looks as though nearly everyone got a crack at one or more of the expeditions during July. While a great deal of the contact work was conducted on 40-meters up to mid-July, the bulk of WNP-traffic has moved on 20-meters since that time. Hundreds of messages have been handled by a great number of stations succeeding in getting good QSO on "20." In listening on 20-meters there have been times when it seemed as if every station in the country was down there trying to get hold of WNP, WOBD or VOQ to help with the messages and QSO the Aretic!

VOQ—PUTNAM BAFFIN ISLAND EXPEDITION

Hr msg fm Schooner *Morrissey* VOQ No 180 Aug 4 To A.R.R.L. Hartford Conn.

We have arrived at Mill Island off S.W. corner of Baffin Island and at the entrance to Fox channel where no short-wave work has been done before. 8DME has been the main contact station and has done wonderful work in handling traffic. We have been QSO since the start and interesting observations are being made by this consistent work. 2UO handled much traffic but has poor receiving conditions against him. Off Labrador north of Cape Harrison poor nights were encountered. While in Hudson Strait much trouble was experienced but conditions fine since reaching Cape Dorset in S.W. Baffin Island. July 27 to 31 inclusive the ship has been anchored in a harbor on Mill Island. Conditions here at the entrance to Fox Channel are as fine as to south. VOQ is now using 20-meter band part of the time day and night. This wave works excellently. A regular schedule is kept with CKA the *Baymaud* in Coronation Gulf. Best DX so far is oz1FQ. Amateur assistance in handling traffic is excellent and is much appreciated. 73 to the gang.

Calls heard from Cape Chidley (Entrance to Hudson Strait) and at Mill Island (Entrance to Fox channel) July 17 to 31 inclusive:

20 Meters:

1vw 1aiq (1big) (1byv) 2mu 2or 2xr 2beb np4sa 5dq 7tj 8aj (8jq) 8adg 8ail 8ayo 8axa 8buh (8dkx) (8dme) 9ef (9kv) 9aly 9baz 9bbh 9bzi, 9cei (9dbz) (9dij) (eg5xy) eb4ww nc2al nc3db WNP.

40 Meters:

1mr 1xv (1aci) 1aoh 1azd 1bjk 1cjc 1cmf 2bm 2fg 2lp 2rs (2uo) 2aoh (2anm) 2ase 2azu 2bcr 2bcw 2ber 2cjd 2xaf 3bx 3ld 2qe 2bms 2bqj 2bva 4bt 4fe 4ll 5di 5nl 5wo 5zav 6hj 6rn 6aak 6asi 6axc oh6bdl 6bfp 6biu 6bvm 6chs 6ciz 6dfs 6djw 6dkj 7dk 7aj 7ti na7ali 8bm 8gl (8iq) 8kf 8li 8pl 8alo 8anc 8aul 8awv (8ppl) 8bsr 8bxj 8ces 8chk 8cjb (8cjv) 8cpc 8ctd 8cux 8cvs 8cxd 8dbm (8dme) 9ak 9ek 9fl 9kb 9lf 9lk 9nr 9sa 9adn 9ads 9ain 9apm 9arb 9ark 9aue 9axz 9bnd 9bwn 9cjh 9cki 9cmj 9csb 9cvu 9cvw (9cvy) 9cya 9dbv 9dol 9dxi 9edw 9efk 9efo 9efr 9egh nc1ak nc4cm nc4gi nc5co nm9a nx1xl oa3es oa3kg (oz1fq) oz2bg oz3ap oz4ac su2ak cka (ca) nkf1 (WNP) WOBD.

Ed. Manley.

This message was taken from VOQ (R5 to R7, 20-meter band, steady) located at the Arctic circle by C. J. Heiser, 8DME, Auburn, N. Y. Ten other long and important messages were taken at the same time—all sending single and FB! VOQ was heard by 4RR, 9EEW, 6BIU, eb4RS, 1BGC and 1AJM and worked by 8DME, 9DAU, 9CEI, 9EF, 9KV, 2BCB, 2AFB, 9DBZ (operated by 9DWN), 1ACI and 8ADG to whom we are indebted for detailed reports. Hundreds of words of press and many messages have been handled by the stations working the *Morrissey*, particularly 8DME (38.45 meters, crystal control) who has had regular contacts since the expedition got under way. Manley has had his troubles at various times with low batteries, shorted transformer sticking of keying relay, and peculiar conditions. The *Morrissey* got caught in an ice pack on one occasion damaging the propellor and making some difficult repairs necessary. The first press to come thru 8DME (500 words of it) was wired to the New York Times with some difficulty. The telegraph op thought it was a joke instead of a bonafide radio message. By guarantee of all charges Western Union finally accepted it. On July 14 the father of the Anthropologist of the expedition visited 8DME. Father and son had an excellent chat by radio, swapping news and experiences and they each got much pleasure in taking the key for a moment to personally bid each other goodnight. Several messages handled were from Hudson Bay men who had not sent word to their relatives in a year. One to Scotland was QSR'd thru 8DME and 8AHC on 20-meters. 2BCB and 9VK handled quite a lot of press. 8DME attributes his success to nightly *schedules* and to always being on a *certain* wavelength, known to both by use of an accurate wavemeter. 9CEI reports the latest contact and msg-handling just as we go to press on Aug. 4, VOQ then located at Cape Dorchester, Western Baffin Island (on the Arctic circle approximately.)

WNP—THE MacMILLIAN EXPEDITION

Hr msg fm Bowdoin Harbor, Labrador WNP nr 214 July 25 (via 2AWX) and hr 327 Aug. 6 (via 1SZ) To A.R.R.L. Hartford, Conn.

Conditions improving at WNP. We are at our winter home near Nain, Labrador, Lat. 56.33 N., Long. 61.41 W. Am clearing traffic on 20-meters. The most reliable stations worked are eb4WW, 2AWX, 8JQ, and 9AFA all on 20-meters. Schedules (EST): 20-meters, WOBD —noon, 1CCZ—3 pm, nc1AR—3.30 pm, eb4WW—4 pm, 8JQ—4.30 pm, 1XV or 1BVL—5 pm, 1AJM—5.30 pm, 9AFA—6 pm, 2AWX—7 pm, 1SZ—7.30 pm, WOBD—8 pm, 6EA—10 pm. 36-meters, nx1XL—9 pm, KGBB—10 pm, 1XV—11 pm, 2UO—midnight. Messages for July, sent 172 and received 38 on 20-meters. On 36-meters sent 86 and received 53. We leave in the morning for Baffin Island returning here for winter September first. 73. Himoe, WNP.

Stations *worked* by WNP in July:

20 Meters:

1ajm 1akz 1aur 1bhm 1bvl 1bux 1byv 1ccz 1ch 1cjc 1cjh 1ia 1kl 1ii 1ro 1sz 1uo 1uw 1vw 1zz 2aib 2avb 2awx 2dr 3bgg 3cjc 4rn 5acl 5dq 5dx 6abn 6bjf 6bwt 6bzf 6ea 8adg 8afq 8ahc 8aly 8ano 8axa 8bev 8btr 8ccq 8cmb 8cxc 8czn 8dds 8dhx 8dkv 8doe 8jq 9afa 9ant 9ark 9bjf 9cei 9cfn 9cn 9cki 9cvy 9dct 9dhp 9dij 9duv 9eag 9ef 9efh 9kv nc-1ar nc-3bt nc-3db nc-3dh nc-3fc np-4sa eb-4rs eb-4ww en-ovn en-oga ef8fd.

40 Meters:

1aba 1abv 1adm 1asu 1atv 1bhs 1bvl 1cio 1ckf 1cnx 1ic 1ej 1fl 1mv 1my 1xm 1xv 1zk 2ayn 2bbx 2ber 2bs 2cez 2crb 2fp 2uo 3bvn 3dw 3ld 3qe 4dx 4iz 4pf 5aj 5avz 5kc 6ajm 6bgb 6bhv 6cua 7mf 7vq 8ako 8azg 8ben 8bki 8bth 8cjv 8cnh 8cpw 8dcm 8jq 8wo 9adg 9apv 9bgk 9bwo 9caj 9egh 9ek 9eld 9fs 9ju 9sa 9uz nc-4fv nc-3bk nc-8azs nc-2be nx-1xl eg-2to ss-2bn eb-4ck ei-1uu nu-1v voq bd8 kgbb.

Cards for WNP were received at Hq. in quantities all through July. np4KD, 1HZ, 6CEG, DEX, g2BOQ, 1QV, 9BYA, 3CGC, 4VH, 1KL and Miss Barbara Dunn, Essex, Eng. report copying WNP while most of the stations in the lists sent by Himoe thru 1SZ have also reported QSO by card. nc2AL and 1AGG (the portable of 2BV) were also in contact. A large number of the stations working WNP mention handling important messages and press. The 20-meter signals are generally reported best in mid or late afternoon being loudest about dark and growing weaker a few hours later. All agree that WNP has a fine note this year. Some like the buzzer modulation better than the "D.C." as it is slightly easier to hold when taking messages. Everyone is helping to put across one of the finest amateur radio contact jobs ever. Let the cards for all the expeditions keep coming.

KFLF

The Yacht *Ripple*, KFLF, has been under way for a month. Radio operator Smith (6BUR) reports fine shortwave communication with the Coast. The radio shack and operator's quarters are on the top deck just aft of the single stack. The photo shows the equipment mentioned last month and Smith at the key. Long- and short-wave receivers are on the left, the long-wave tube transmitter panel on the right, and the short-wave set in the center with the wavemeter in front of it. One 204A in a tuned-plate tuned-grid arrangement is used and gives a fine steady signal under shipboard conditions. Three condensers; tuning grid, plate, and antenna circuits are mounted on the set providing a wave-change of ten (33-43) meters. A plate wattmeter, plate and grid milliammeters, filament voltmeter and antenna ammeter tell the operator what is going on. A single wire from the roof of the shack to the end of one of the large antenna spreaders proved best for short-wave operation. 500-cycle plate supply is used. The wave is normally 33 meters al-

though at times work is done on 39 meters in the amateur band.

In the first week of operation QRD Honolulu, stations in all parts of North America, Central America, Hawaii and Australia were worked. Schedules were kept with 6CHZ and 6CQA. They have done some fine relaying getting replies to Los Angeles traffic within a half-hour of filing time. Often the yacht's

owner, Mr. E. C. Wilson, exchanges several messages with his brother in an hour or so. With such contact with office and home, a yacht owner can wander many miles without feeling that he is off in the wilderness.

9BHI reports a contact with KFLF July 21 when 400 miles east of Hawaii. 6AVB and 6AM have also been in communication and handled traffic on a fairly regular schedule.

The yacht will leave Honolulu about the last part of July for Polynesian waters and after an extended cruise in this territory will return to Honolulu and Los Angeles. This cruise however will not mark the end of short-wave work, and in the next few years KFLF will no doubt be heard from all parts of the globe. All reports should be addressed to KFLF, care of 6BUR, L. Elden Smith, 340 No. Painter Ave., Whittier, Calif.

WOBD

The *Radio* has been at Nain, Labrador unloading supplies for the scientific base to be built there. Communication throughout the month has been very good. R. D. Stimpson, 1KL, Skowhegan Maine kept a daily schedule handling over 120 messages of letter-size. Smith, 1ATV, also kept a regular schedule and handled a couple of hundred messages more or less for the expedition. 2AVR, 9CFN, 8JQ, 8BEV, 8DXK, 1BYV, 1AJM, 1SZ and nc2AL report working OM Gold on the *Radio*. 1AAL has kept a schedule regularly handling batches of five or six messages at one sitting. The *Radio* should be well on its way back to the U. S. by the time this *QST* reaches you. We understand that both 20- and 40-meter signals get thru in nice shape from WOBD.

A msg just rec'd by radio from operator Gold of WOBD (via 1SZ), "Have handled about 45 messages so far on 20-meters. Had trouble at first getting signal steady on that wavelength. Am using two UV211's with about 250 watts input. Stations worked here on 20 meters July 25—Aug. 8: 2AIL, 8DOD, 8JQ, 2AGN, 9DQU, 1AAL 9CFN, 1BCZ, 1VW, 2CXL, 9KV, nc2AL, 1AJM, 9CMV, 2AEF, eb4WW, 8BEZ, 8BCT, 2AWQ, 9DGA, 9BTM, ef8GI, ef8CT, ef8JF, 1RY, 1SZ, 2NM, and 8AIL. 73."

KFVM

The Yacht *Idalia*, KFVM, took part in the San Francisco to Santa Barbara yacht race, reporting the news by radio as it happened and taking part in the regatta Aug. 6. Immediately thereafter it sailed on a four months cruise ORD Cape Horn, Hawaii, and Alaska to return to Oakland in mid-November. Berton Dare, 6OC, is operator. KFVM works on 34.5 meters for amateur contact.

Two silver cups will be given for the best work with KFVM, awards based on the scores of those who enter the competition. Each report of hearing KFVM counts one point, each QSO four points, and each QSO with messages or press five points. The cup offered by Operator Dare for the most consistent work *by any sixth district amateur* will be presented to the winner at the Pacific Division Convention on Oct. 15. The cup offered by the Ham-Meter is for the best work by any amateur operator in the U.S.A. *outside* the sixth inspection district. This will be awarded when the expedition returns. Three judges will check the results. S.C.M. P. W. Dann (6ZX) and Mr. Jack Ward (6CKC) are to be judges and it is now practically certain that Pacific Division Director A. H. Babcock will be the third judge. One may enter the contest for the cups by sending reports on KFVM to J. R. Ward, 6CKC, or to J. H. MacLafferty Jr., 6RJ. Get busy with KFVM gang and don't forget to keep up contact with all the expeditions.

VYG

The Canadian Government Steamer *Beothic* xncVYG is again on a three months voyage in the Arctic, equipped for both long- and short-wave work. She is an icebreaker with a crew of thirty men, the passengers being of the Royal Canadian Mounted Police. The short-wave set works on 32.5 meters official traffic going through VAS. 4LK has a daily schedule at midnight. 9DAU reports the sigs from VYG very steady and R5. 4RR took an official rush message for Ottawa and when he found the Western Union had closed so it couldn't be filed he passed it on to 3BSD who did a splendid job of copying and taking instructions from an R4 signal and bad local conditions. That's cooperation in relaying. Nice work, everybody!

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KFZQ is the motor yacht *Robador* working on 41 meters. She was in New York City when 4RR was QSO Aug. 2.

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OIK is the Danish ship *Lituania* using a couple of UX-201A's on 38 meters. 1BYV worked her July 13 and says she runs between Danzig in the Baltic Sea and N.Y.C. Cards should be sent to Operators, *S.S. Lituania*, Holbergsgade 2, Copenhagen, Denmark. 9EFW was QSO July 15.

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WAP is the Schooner *Peary* of the 1925 MacMillan expedition. She is now in Porto Rican waters. 9BOM-9DXI was QSO July 15.

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KGBB, the *Ungava*, is out of things temporarily with a burned-out M.G.

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OIC is the Danish ship *Oregon* using about 37.6 meters. . . a quarter-Kw. tube with 500-cycle plate supply enroute from South American ports to Copenhagen. This ship was near the equator when worked by S.C.M. Briggs of 1BVL. S.C.M. Peacox was in contact and reports that the 2UO press is copied regularly. OXX, now in the Pacific, is another of the Danish ships carrying short-wave apparatus.

ARMY-AMATEUR NOTES

Capt. Ira H. Treest has been appointed Liaison Agent at Fort Monmouth, replacing Capt. A. C. Stanford, who has transferred to the Field Artillery.

SECOND CORPS AREA—The N. C. S. of each Net continues to keep his schedules with 2SC. All other skeds have been temporarily discontinued. 2ADZ is a new station in the Brooklyn-S.I. Net. 3HW has resumed his duties as principal N. C. S. of the N.J.N.G. Net, after being laid up in bed for almost two months. 3ZI, the alternate N. C. S. kept the skeds with 2SC during 3HW's illness.

THIRD CORPS AREA—Interest in this area continues to be somewhat lessened due to the summer weather. Two more amateurs were enrolled during the month, but very little work was done by the area, as all operators at station 5AIN were busy with the Division Radio School and Summer Training Camps.

TRAFFIC BRIEFS

3CAB thinks that all ORS should confirm telephone deliveries of messages by mail, except those going to A.R.R.L. members. It would be a fine idea, gang, as there is always the possibility of misunderstandings over the phone. What say?

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For those of you who wish to display your QSL cards on the wall, but are unable to on account of objections from the better half. 1BYV suggests a good idea. He puts a small hole in the four corners of each card, and runs two strings down the length of the wall. These two strings go through the holes in each card, going in at the top and out at the bottom of each card. Thus by placing one thumb tack at the top of a string of cards, twenty or thirty may be placed on the wall, leaving only one small hole.

Chess

By J. C. Lewis, 6ZBJ

THE Santa Barbara County Chess Club and the San Diego County Chess Club had long been wanting to tangle for the Championship of Southern California, but because of the time and expense involved, had never gotten to it. Being aware of the *status quo*, I thought we could help them to a bitter ending by amateur radio, so got in touch with Don of 6AJM, who said, "FB, OM, we'll do it if we break a leg and jim all our bottles." So the contest was set for Decoration Day.

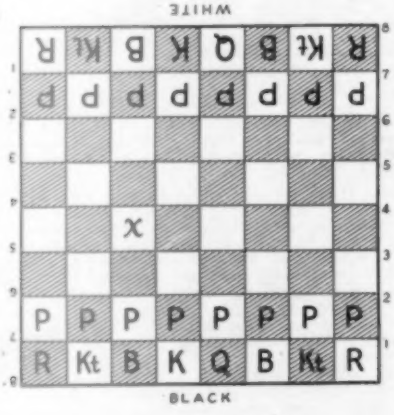
Five boards were played simultaneously, and at 6ZBJ with the assistance of 6CMY, a public address system was rigged from the Chess Club's room to the operator's room. At 6AJM, however, the club had to adjourn to AJM's shack, where they held forth. Contact was established at 12:45 PM, and continued until 9:20 PM continuous operation, when suddenly sigs went up to R9 with a shrill hollow sound, and then went out on us completely. The games were not completed yet, so we agreed to take it up again on the Saturday PM following, which we did.

It was great fun even though 6AJM passed out at one time from an abcessed tooth, and had to call in 6BYB, who substituted nobly. The Chess Clubs were most enthusiastic over the match, and have already agreed that it shall be an annual affair. The local club has asked me if I'll get a match with Chicago, New York, and maybe Shanghai next—hi!

In case some of you are interested, here is the system we used. Of course, abbreviations for the names of the various pieces and moves were in order, and following is the list as we worked it:

Pawn	P	Queen	Q
Castle or Rook	R	Takes	X
Knight	Kt	Check	Ck
Bishop	B	To	To
King	K	Square	Sq

The accompanying diagram of the chess board will show you the arrangement of pieces, and the method of numbering the squares. The squares occupied by the pieces at the start are referred to during the game as Rooks square or Knights square, etc., always



modified, however, by the side they happen to be on, such as Kings Rooks square, or Queens Rooks square. These are abbreviated according to our table to KRSq, or QRSq, etc. The pawn squares are referred to as a certain pawn's square, such as KPSq (Kings Pawns square), or KBPSq (Kings Bishops Pawns square). However, from here on the squares are numbered as in the diagram. For instance K5 would be the fifth square across the board, counting the Kings square as 1, or KB3 would be the third square across the board, counting the King's Bishop square as 1. The square marked *x* in the diagram would therefore be called KB4. It will be noticed, however, that this square which is KB4 for the *blacks*, is KB5 for the *whites*, thus making it very easy to give checks on where certain pieces are at any time.

We used mimeographed message blanks, of two different colors—one for incoming and one for outgoing messages—which had provisions for filling in the board number, the move number, the time, the operator, the move itself, and remarks. Messages were all sent in the following form: "Hr Bd Nr 1 Mv 3—KKt X P Ck—This pawn on KB4". That message, of course, means that the King's Knight takes a pawn, thus checking the opposing King. The remarks are merely used when it is desired to make some possibly doubtful point clear. In this case the remarks remove all possible doubt as to which pawn was taken by the Knight.

That's all there is to it. It furnishes a new and interesting kind of operation, and I hope some of you will see fit to give it a try.

A chess match between the Thomas Jefferson High School Chess Team, of New York, and the Hyde Park High School Chess Team, of Chicago, was recently run off by radio, with 2APD on the Brooklyn end, and 9BBA on the Chicago end. Three boards were played at one time. 2APD tells us about it as follows: "9BBA should get credit for starting the whole shooting match. Credit should also go to 8BAU, 2CRB, and 9LL. 8BAU spent many a weary hour trying to get 9BBA to hear me. We had everything arranged to start on a Sunday at 12 noon. From 10 until 12, 8BAU was working 9BBA and myself every fifteen minutes. At exactly 11:55 everything went wrong. I couldn't hear 8BAU and he couldn't hear 9BBA. By some freak of luck, however, I heard 9BBA calling me, and when I worked him, I found that he had been copying me all morning. From then on, except for copying an R1-2 signal, everything was hotsy-totsy. At about 7 PM his signals reached an amazing intensity of R3. Most of the work was done through daylight and plenty of QRN. 2CRB relieved me for about two hours, and 9LL did the same for 9BBA. It was all hard work, but lots of fun."

NOTICE

During the past month two Section Managers have taken office. They are: In the New Mexico Section of the West Gulf Division, Lawrence E. Radka, 5TT, Tucumcari, N. M. In the Florida Section of the Southeastern Division, C. E. Ffoulkes, 4LK, 502 Spearing St., Jacksonville, Fla. Please give your officials your cooperation in all they are attempting for your Section of A.R.R.L.

This month we are sorry to be obliged to record the resignation of S. C. M.s in the Hawaiian Section of the Pacific Division, and in the Delaware-Maryland-District of Columbia Section of the Atlantic Division. S. C. M. Lucas' resignation is effective Nov. 1, 1927 and S. C. M. Goodall will carry on until the election of his successor. To OMS Lucas and Goodall go all good wishes from the gang.

Due to these resignations and to vacancies in our line-up previously existing, *nominating petitions for Section Communications Managers are hereby solicited from the following Sections:*

Section	Petitions to be valid must be filed on or before
Hawaiian	Noon, October 15
Del.-Md.-D. of C.	Noon, October 5
Eastern New York	Noon, October 5
Montana	Noon, October 5
Washington	Noon, October 5
Alaska	Noon, October 5

The closing dates for receipt of nominating petitions in the Sections listed is given above either as previously announced or extended when necessary due to the failure of members in filing petitions in certain Sections. Petitions must be filed at A.R.R.L. Headquarters on or before the time announced to be valid. The proper form for nomination was shown on page 45 of April 1926 *QST*. The candidate and five signers of a nominating petition for Section Communications Manager *must* be members of the A.R.R.L. in good standing and the signatures on the petition must be authentic or the petition will be thrown out as invalid. Members are urged to take initiative immediately, filing petitions for the officials of each Section now operating under temporary officials, so that the work of organization can go forward everywhere without further delay.

—F. E. HANDY, Communications Manager.

OFFICIAL BROADCASTING STATIONS

Changes and Additions
(Local Standard Time)

6ALZ-6AGH (41) 5 pm daily; 7AAT-QT (40) 6:30 am. Mon. Wed. Sat.; 9BWN (76.4-38.2) 10:30 pm Mon. (19.1) 7 pm Wed. Thurs. Sat.; nc8AZS (37) 8:00, 9:30 pm. Wed. Sun.

20-Meter Reports

9DUV (Tower, Minn.), "I have been using the 20-meter band for about a month and it sure is the best for consistent QSO. Worked everything heard thus far. 'Nu' sigs are best between 4pm and 9pm."

np4KD (Ensenada, P. R.), "I find 20-meters VY FB for the man with low power and a poor location. With 25 watts input to a UX210 I hooked 8BQE for a one hour QSO. Worked eb4WW (July 5) for the first 'eb-np' contact as easily as tho he were local instead of 5,000 miles away. Not a QTA was necessary. QRM is conspicuous by its absence. No QRN worth mentioning tho no less authority than Dr. L. W. Austin of the Navy Dep't. has said that QRN in P.R. in its lightest month is worse than in the U.S. in its heaviest month. All districts are QSA hr in daylight and nights until 3am. It used to be forty calls and one QSO on 40-meters. On '20' it's one call and forty answers. Some different. I have yet to QSZ or QTA a single word either way. From my experience, '20' is the *only* place for the man with a pair of 201A's or a 7½ watter."

1AAL (Worcester, Mass.), "Am having wonderful results on '20.' Using a single UX210. About 5 QSO's working from 6:30 to 7pm two nights. It is sure FB and then some! Worked eOVN. QRA? Took five messages from WOBD on this wave!"

9EF (Hammond, Ind.), "Besides my 20-meter expedition work, I was QSO ML (Honduras, Central America) on Aug. 1 for 17 minutes. 20 meters has no peer! His QRH is approx. 18.4 meters. Is this the first Honduras-U.S.A. QSO on '20'?" (Yes, OM, so far as has been reported to us.—C.M.)

9EJQ (Goldfield, Iowa), "I have worked more ones on '20' than all other districts put together and a bunch of eights and fives. In fact, every district but the fourth and seventh. I have been heard in England besides. Recently worked 9DHR (Indianapolis), 9DED (Denver), 9DRD (Edwardsville, Kansas) and 9BYL (La Junta, Colo.), all comparatively near for '20'."

7RL-7MR (Ellensburg, Washn.), "I was heard in all six continents while QSO with 2EV and a '3' station May 30 on 20-meters. Right after that QSO I worked South America, Australia and Asia and got reports and more recently cards on the same QSOs from England and South Africa."

1BYV (Framingham Center, Mass.), "July 6 I hooked eg2CS, R5 when he used but 5 watts input, and he said I was the second U.S. QSO on this power. 1AQT having beat me to it by about 10 minutes. We have lots of interesting things on '20.' Did you know gc6KO in Torfar, Scotland, used a hand driven generator. He turns it with his left hand and sends on a straight key or bug with the right hand. Hi! gi2IT uses a gas-driven generator and while working 5ACL ran out of gas. fmN2TU has been worked more than a few times on '20' and requests QSLs to his QRA (fmN2TU, Solet, P.O. Box 72, Bizerta, Tunis, Africa). Worked an unknown ship signing BR on 17 meters. European sigs are stronger daily. eb4WW tops the list with R8 and 9. eg5LS, ef8YOR and gi2IT are also pushing wicked signals."

8BEV (Bucyrus, O.), "Unfavorable wx makes conditions much worse than in the spring but there is an occasional good day. Am using an 852 with 24 foot indoor Hertz and have been QSO ei1GW three times. Get an R5 report tho QRL here. Work eg5YX on sked. Have heard a number of ef, eg, ei, eb, sb, sc, su, oh, oa and oz."

9BKV (Akron, Iowa), "Getting out well using 160 volts DC on two 201As. Worked 9CPH (Peoria, Ill.) June 6 at 9.30pm CST, sigs R6 and steady both ways. This is second nine heard and first worked on 20. Someone said we couldn't work nines. Who was it?"

2AYJ (Oyster Bay, L. I., N. Y.), "Am on '20' and it sure is the berries. Stepping out fine. Worked five foreigners in a row yesterday and with a punk antenna at that."

Received from 9DHP (Minneapolis, Minn.) via 1MK, "Using rod for aerial I find I can get R2 from WNP this afternoon. Called him as soon as he finished with eb4RS (2.15pm). Have been hearing him regularly on 21.6 meters, R5-6 steady DC, QRA Nain, Labrador."

9CEI (Michigan, N. D.) by message thru 1MK, "Worked ef8CT on '20' July 28 5pm CST getting R7. QSO eb4WW for three hours on the afternoon of July 29, his sigs R6-7 and mine R7-8 whole time. QSO consisted of testing and chatting. Made tentative daily sked at 2000 GCT. His QRH 20.8, mine 20.2."

5ACL (Dallas, Texas), "My station has been on '20' for three summers but this is the first one when there have been enuf stations to make decent work possible. Have worked eg, gi, ef, sb, nm, oa, sc, su, eb and ships at sea since May. All the old rag-chewers have dropped to '20' and long-hop traffic is easily QSR'd. A plug-in T.P.T.G. with series feed is used for a 30-second QSY to 20.1 or 41.0 meters. A 60-ft horizontal Hertz is used with voltage feed. 5NW (200 miles) and 5WZ (30 miles) are R5-6 here. eb4WW is vy QSA going from R3 at 3pm to R6-7 at 10pm. oa2RC is heard QSA. gi2IT reports me the first '5' to QSO Ireland."

2AER (Red Bank, N. J.), "Re 20-meter work. I find it the best band for reliable pleasant communication. It's better than 40 in traffic, rag-chewing and DX. The foreigners come in better. I used to get R3 in Calif. and Europe on 40-meters. On 20-meters I am R7 in the same places!"

9DWZ (Denver, Colo.), "I should like to see more discussion on the peculiarities of the 20 and 40 meter bands. But one station here has ever hooked up with a European amateur, yet fellows on the Coast, 1000 miles away have hooked them. We hear little DX outside the U.S.A. on '20'."

1SZ (Hartford, Conn.), "I have found '20' inconsistent, not a single signal heard some nights. Made 14 QSO's one afternoon. Tests with a '3' varying power from 550 to 7 watts gave audibilities of R8 to R5. Give me a transmitter that will QSY to '20' at the push of a button and go back to '40' as easily. Then it will be possible to work on '20' when that band is best and go to the other wave when N. D. on '20.' I worked WNP again. Also heard saDA8 and saFC6 both R6."

8DME (Auburn, N.Y.) in his report on the International Relay Party says, "Couldn't raise any foreign stations on the 30-40-meter waves . . . . there was too much competition on twenty. Hi!"

9EEW (Alliance, Neb.), "20-meters FB here. When I can't get over the back fence on '40,' 20 meters does the trick. It was not as good here through July as in June. Have good results using one UX210, 550-volts before the drop thru the S tubes."

1ADW (Danbury, Conn.), "oa5BW reported to me by radio that he seldom hears and 1's or other U.S. districts on the forty meter band. He says that they must all be working on twenty."

2BCB (New York City), "I'm using a UX210 with about 30 watts input in Hartley circuit, bad location, electric fan QRM, and plenty of autos. My first CQ on '20' put me QSO with nc4DP with R5-6 report. The second QSO was with VOQ (at Mill Island). 20-meters for me from now on in addition to '40' and '80'! It's FB!"

eb4RS (Verviers, Belgium), "I am on 19.8 meters from June 4 and find conditions very variable. The West Coast is easy to work in the morning (0660 Greenwich). Some 7's are as loud as local stations! East Coast stations are irregular but easier to work in the evening (about 2230 Greenwich)."

9KV (Duluth, Minn.), "Just a line to report QSO with WNP, VOQ and WOBD. July 30 I took two msgs from WNP and QSR'd 'em to Chicago one hour later. July 31 took 1200 words of press single from VOQ and put it on Western Union. I have a daily schedule with VOQ at 2330 Greenwich. Sked with WNP Tuesdays and Fridays at 0200 and the same days with 9CIA at 0300 for quick QSR Chicago. This is ENTIRELY 20-meters and I must say it sure is FB. Signals always R6 and nearly always R8!"

6AZS (Los Gatos, Calif.), "My station is in a valley and up to last fall all stations in the West had trouble in working Europe. Since the gang have gone to '20' contact with Europe even in summer has ceased to be an achievement. In my first night on '20' I QSO'd ef8YOR getting the additional card necessary for my WAC membership. In four weeks work 20-meters has '40' backed off the map for Asian QSO. amVS1AB is R8 at 9am PST daily. Have also worked am3AB in Malaya and both stations are much better on '20' than they ever were on '40.' eg5HS, gi6MU, eb4RS, 4WW, 4AX and 4AU have been worked and many others heard. More foreign amateurs should get down on '20' for *real* QSO's. Let's all tell 'em so when we work 40-meter stations."

Operator Himoe of WNP has a word about "20" in a message just rec'd on 20-m via nu1SZ. "Conditions on this wave are very good along Labrador.

1st, 2nd, 3rd, 8th and 9th districts are heard all afternoon. 1's and 2's drop out as darkness comes. 3's and 8's drop out a little later. 9's are good until 9pm. 5's are good from 8 to 10pm and 6's from 9 to 11pm EST. QSS is often quite bad. The signals heard seem to sweep from East to West about three times during the day R5 from 1st to 9th district jumping back and starting 1st again."

sb1AA (Jose Jonostkoff, Almeida Gomes, Rua Xavier da Silveria n deg. 23 Rio de Janeiro, Brazil) "I am using two UX210's in a self-rectified Hartley feeding horizontal Hertz tuned for 35 meters. My transmitter was made for 35 meters but as now we can't do any DX on that wave I just twisted the tuning controls down to 19.5 meters."

TRAFFIC BRIEFS

Walter R. Pottle, nc4AO, has been appointed Radio Inspector and Radio Electrician for the Province of Saskatchewan under Radio Branch Department of Marine and Fisheries. This new office will not keep 4AO off the air, however, and "Wallie" expects to be with us again before long.

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A message recently originated at 8AKI, and bound for Scotland, took an interesting route. It went from Altoona, Pa., to New York, to San Jose, Costa Rica, to Italy, and then to two different stations in France. The last of these two stations mailed the message to Scotland. The whole thing took a month or so, but at least the message *was* delivered in good shape.

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Oa-4LJ informs us that The Queensland Radio Transmitters' League has appointed on4CG and on4CM as stations to handle experimental international traffic for their members in the fourth Australian district.

TRAFFIC BRIEFS

A message to his wife from General Feland, stationed at Nicaragua, was recently relayed from nn1NIC to nu8CRP to nu3KJ, and answer obtained by KJ, and relayed back to Nicaragua by the same route. Twenty four hours was all that was necessary for this nice bit of work, and this time would probably have been shortened but for the fact that Mrs. Feland could not be reached by telephone.

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John Clayton tells us that NRRC is going again on 4115 Kc. (73 meters) with a lone 852 and 500-cycle plate supply. He sez the transmitter is 5 miles from the receiver. Oh boy—speaking of bk-in work!

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ef8JF & 8CL write us as follows, "When nu stations hear a European calling 'CQ DX only nu6 & 7,' why do hams on the eastern coast answer him?"

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During the flight of Maitland and Hegenberger to Hawaii, amateurs maintained a constant vigil and QST'd reports on the flyers. By listening to a QST from oh6AJL, nu7BM was able to get the first news of the flight to the morning paper in his city. 7BM tells us that many Hawaiian stations were on the job during both this flight and the Smith flight, and deserve a great deal of credit for their work. FB!

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Four MO-PA transmitters have been installed at different locations by the Forestry Branch of the Department of Lands and Forests (Ontario), all operating on wavelengths very close to 100 meters. The calls are 9BFL at Long Lake, 9BFR at Red Lake, 9BFP at Pine Ridge, and 9BFS at Sioux Lookout. Schedules are kept every hour from 0900 to 1700 inclusive, but omitting 1200. Should there be a fire in that vicinity, the stations are required to remain in constant operation until the seaplanes stop running, which is at sunset.

BRASS POUNDERS' LEAGUE

Call	Orig.	Del.	Rel.	Total
op1HR	139	61	140	340
8CYK	172	28	102	312
6BUX	94	141	10	245
1KL	25	87	123	235
8BAU	31	17	182	230
5FJ	21	4	186	211
7AEK	85	100	16	201
9PU	19	9	158	186
6BJX	53	111	20	184
3CBT	57	54	32	175
8CGZ	1	7	14	152
9CMV	74	18	54	146
6BHI	5	15	121	141
1BIG	12	62	65	139
8EU	27	30	80	137
8DME	28	41	66	135
8BPL	5	17	111	133
8AVK	22	9	100	131
6COP	55	65	10	130
8DFD	32	10	82	124
2ALP	33	36	48	117
1ACH	11	14	89	114
6BZC	4	8	100	112
8BYN	6	2	104	112
1ACA	26	30	55	111
5APT	90	—	12	102
6AM	44	39	19	102
9SO	63	9	30	102
1UE	16	15	69	100

op1HR leads the B.P.L. this month with 8CYK a close second. 6BUX and 1KL are next in line, both with a fine bunch of *deliveries* to their credit. 7AEK, op1HR, 6BJX, 1BIG and 8DME stand out from other stations due to the high percentage of DELIVERED messages in their totals. *Regular schedules* with Alaska, the Philippines, with reliable U. S. amateurs, and different expeditions is responsible for the fine work many B. P. L. members are doing. Messages are handled QUICKLY, ACCURATELY, and DELIVERED SURELY by these and other Official Relay Stations. If you aren't there, why not, OM?

With The Route Managers

By Lawrence A. Jones*

VACATIONS! Everybody's either taking 'em or talking about 'em, so I'm afraid this report will have to be rather short and snappy. However, fall is going to see the biggest amount of *good* traffic handling we've ever had, because you fellows are going to see to it that efficient routes are made available to the rest of the gang. Now let's see what some of you have been doing.

Webb, 4NE and RM of Florida, has managed to keep several of his stations actively handling traffic even through bum radio wx. Not only that, but he sends out a postcard to all his ORS each month, listing the *reliable* skeds, (most of which are kept daily), and asking for more. I wish more of you could get your ORS to cooperate with you enough to get a finely organized bunch of skeds. Instead of letting each station go ahead and fix himself up a sked here and there, why not get together about the thing, and persuade him to make his skeds where they will do the most good for his section? Then it will be worth while to present these to all the gang here in *QST*. We'll have then what 6ZBJ calls a real A.R.R.L. Net Work. Right now, it's just a maze.

Well, I've just been looking over what letters we have received during the month, and it looks as though there isn't much more to tell you. Most of the gang are making plans for the Fall, but report practically nil doing at present. As McElwain of 9CZC puts it, "Traffic conditions here practically the same every summer. When vacations are over, and school starts again, the hams wander back to the shack and renew acquaintances for the winter's brass pounding."

I promised Smitty of 3CEB that I'd mention the fact that he and 3BWT are trying to form a QSR line through the south and southwest, and they need cooperation from the RMs down there. This will be a great thing when they get it going, so we'll appreciate help from anyone who wants to give it. What say?

Guess nil hr nw, so 73 fm LJ.

*Assistant to the Communications Manager.

TRAFFIC BRIEFS

H. M. Walleze, 8BQ and SCM of Eastern Penna., tells us how some of his fellows manage with local and dx traffic. He sez, "The Williamsport gang have the system. The 80 meter crowd collect their traffic and know each others skeds, (which includes knowing the skeds of 40 meter stations). Now when an 80 m. station picks up a message that can be better handled on 40, it is handed to a local 40 meter station through a sked. The 80 meter fellow sends on 80 as usual, and the 40 meter man sends on forty. The opposite, of course, is also true, that a forty meter station receiving a more or less local message passes it immediately to an 80 meter station on sked. The reason for all this is that it is much easier to swap coils in a receiver than a transmitter, and much less confusion is going to result from a scheme like this than would be bound to show up if the gang tried to QSY their xmitters back and forth."

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9CXX and two of his friends took a long tour to the west coast and back in a delivery truck which was fitted up in back with all the comforts of home. The truck carried a portable outfit under the call 9ZZA, with which the fellows were able to keep in touch with the folks back in Iowa during practically the whole trip. Havva gud time?

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When the Dartmouth Outing party succeeded in climbing Mount Washington, the news was transmitted from 1UN in Pinkham Notch, N. H., to 1IP in Manchester, N. H. 1IP copied the whole report and gave it direct to the *Union-Leader*, of his city. This was the only way that the paper's correspondent had of getting the message through, and it proved to be highly successful. FB!

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The radio officer who started Frederick Best, 1BIG, winner of the Traffic Trophy, in amateur radio is Lieut. A. J. Spriggs now in Washington, D. C., waiting for a ship before returning to sea duty. Lieut. Spriggs is operating 3KR, at 624 Rock Creek, Church Road. While at Yale last year on research work for his Master's Degree, his station call was 1CAL.

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Slow up your "Bugs". You all know that those automatic keys were devised not only to speed up transmission, but to improve sending and make the sending of large amounts of traffic possible with less effort. How can they be expected to do this when you try to run them with all the weights removed? The average bug key often needs *more* weights than are supplied with it. Adjust the weights while sending until a string of fives on your straight key and a bunch of fives on the bug sound about the same —like NAA.

"THE HAM"

By Dick Hilferty of 1FL

"DH"

When you're fishing for a "limie" thru a maze of QRN
And you're longing for a QSO with far-off radio men,
While the air is clear as crystal and the milky way is bright
And you're sure you're going to work 'em to your fluttering heart's delight.

The faithful fifty watter with its cheerful golden glow
Almost seems to speak and tell you that its rarin' for to go.
You light a fag and take a darg to steady up your fist,
Then settle back and give the dials another little twist.

What's that! Oh damn the static—now could that signal be—
Hurray! His intermediate and it surely was a "Z"
You yank down on your "I" switch nearly pull it off the wall
And your bloomin' mitt is shaking as you're pounding out his call.

You clamp the "cans" upon your head and hold your breath for years
And all this time the QRN is frying in your ears.
A faint and faltering warble—can it possibly be true?
It is the self same signal and by God he's calling you!

A contact is established and you're "pleased to QSO".
You shake his hand across the world—he tells you "Cheerio."
You gaze about; the moon and stars begin to fade away
And with a start you realize that it is almost day.

You've sailed the seas for many a year—heard many an SOS,
Seen many a gallant battle-wagon battered to a mess
Survived a war; you still can hear the sailors curse and damn
But the one great thrill that reigns supreme, is that of BEING A HAM.

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The R.M. of W. Va., Sgt. E. L. Murrill, 8OK, and a bunch of other hams spent two weeks in August at an army encampment taking along a 250 watter working in the 20-and 40-meter bands under the call CV-6.

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6ZD was instrumental in effecting some fine cooperation by amateurs with the American Institute of Pacific Relations. News and bulletins of a meeting being held at Honolulu were supplied the American Press through amateur radio exclusively. 6BUC was the station on the Hawaiian end of things, while 6APA helped 6ZD at this end. FB!

DIVISIONAL REPORTS

ATLANTIC DIVISION

MARYLAND—DEL.—DIST. OF COLUMBIA—A. B. Goodall, SCM, 3AB—Maryland: Most of the stations are now on 40 meters because of the summer air conditions, though several are heard occasionally on 80 meters for traffic. 3CGC has been trying out 20 with considerable success, but reports "fliver QRM" on these low waves. 3LL is still fixing up a crystal outfit. 3CFX is doing great work with his B-battery set, but reports that it is difficult to maintain schedules through the summer QRM.

District of Col.—3CAB, the traveling ham, has been home more than usual this month with the result that he is able to report a fair traffic total. 3BWT has cut off all schedule work for the summer and is only operating as the spirit moves. 3GP is still holding down the 40 meter band. 3CDQ is having a new transmitter built, using one of the new 75-watt tubes and is expected back on the air shortly.

Traffic: 3BWT 7, 3CAB 52, 3HI 22, 3CFX 10, 3CGC 26, 3AB 6.

EASTERN PENNSYLVANIA—SCM, H. M. Walleze, 8BQ—Well fellows, vacations should be about over now and big plans under way for the Fall rush. We were second only to the Los Angeles gang with the traffic last month and they have almost twice as many ORS's. FB! Now let's show 'em up. We can do it. Help eliminate this rubber stamp stuff by not handling it. There is plenty of good traffic to keep us busy. RM 3AIY is doing FB work in Phila. 3HD has some good skeds working. 3AFA is lining some up. That arc isn't in action at 8CMO's yet, but just wait! 3BGG finds good traffic on 20. 4OM is not so hot for 3CDS so an 80 rig is in order. 3HH is cutting a mean swath down his way. 8ADQ, 3ADE, 3PY and others are rebuilding. 3AY and 8BSZ had to drop their ORS work. The old "S" tubes went west for 3BLC. 8RQ is doing very good work in spite of his indoor "radiator". RM 8EU, went and shot 8CW's slop jars up with a gat. 8WJ went in for auto racing but his bus got bearings QSS. Hi! 3SM is not home much but didn't do so bad on 80. 8CW is hitting it up OK.

3AWT is in action again. A sore fist gave 3BIT trouble. 3CBT lost his punch when he QRPed. 20 is still stepping FB for 8AVL. 8AVK is on the job as usual. Our old friend 3ZS is back with us. Welcome Ole Timer! 8CGZ's MG QRM cuts his working hours. 3NP holds his usual pace. Summer college will keep 3QY off. 40 is dead for 3BMS. 8ADQ will be in action shortly now. 3BLP must drop his ORS temporarily due to business pressure. Sorry OM. 3QM promises to be an ac-

tive ORS. 3BFL was away. QRN is holding 3NF down. 3ZM keeps his Xtal set on 40. 8DIP is a new station in Sandy Lake. Don't forget to QSO your RM's for those Fall skeds. We are going to have a FB layout if you do your part.

Traffic: 3CBT 175; 8CGZ 152; 8EU 137; 8AVK 131; 3SM 76; 8RQ 57; 3DIT 40; 8CMO 37; 3NP 32; 3HD 20; 3AIY 16; 3AWT 13; 8CW 12; 3BMS 11; 3HH 11; 3NF 11; 3CDS 9; 3QY 9; 3BGG 6; 3AFA 8; 3QM 7; 8AVL 7; 3BFL 6, 3ZM 6; 3ZS 3; 3BLP 1.

WESTERN NEW YORK—SCM, C. S. Taylor, 8PJ—The gang this month has responded fairly well considering the nice vacation weather, etc. 8ADG has worked 5 foreigners. 8AHC worked France, Belgium, Scotland, Ireland, and Brazil. 8AKC worked Belgium and Germany. 8ANX had visits from 4OO, 8BIW, 8AYU and 8PV. 8APK will be off the air until Oct. 8ARG has a new 50 watter. 8AVJ is off for the summer. 8AYB says localities turned him down on message traffic. This is rotten business, gang. 8AOM handled lots of messages in great style. 8WU is second operator at this station during his college vacation. 8AYU has schedules with 8BIW, 3AC, 8CRF and 1AMO. 8CID handles messages from a boat on Lake George on swimming events. 8BCM handles his usual traffic. 8BCZ will be off the air for about six months on account of playing in an orchestra in N. Y. C. 8BFG is off camping. 8BIW has skeds with 8AYU daily at 6 pm. 8BLI has increased his power to 75 watts. 8BLP does good work with Hawaii on his UX210. 8BMJ worked two foreigners on 80 meters. 8BQK handles traffic. 8BUJ has skeds with 4AAR. 8BZP is out of commission at present. 8CDB handled quite a bit of traffic. 8CDC is off the air on account of new QRA. 8CNT handles traffic. 8CNX reports traffic great. 8CPC is a new crystal control station and very active. 8CVJ was heard in England. 8CYK works all districts but the 6th and 7th. 8DHX worked WNP. 8DME handled messages from VOQ, press, etc. 8DNE is at Camp but has transmitter 30 yards from a lake. 8DRJ handles traffic and skeds with eg5MQ daily. 8FU says things are going better. 8DKX and 8AVW are after portable sets now. 8HJ is off until fall. 8KS handled traffic with WBO to Ford plane. 8PJ just returned from his yearly cruise on the *U. S. S. Humphreys*. 8TH has a new MG for his set and is now on. This month's reports have been very good but there are several of the fellows who have forgotten to report. There will be some cancellations if it happens very often.

Traffic: 8ADG 8, 8AHC 5, 8AKC 14, 8APK 3, 8AYU 9, 8BMC 7, 8BIW 11, 8BLI 2, 8BLP 70, 8BMJ 5, 8BQK 7, 8BUJ 3, 8CDB 22, 8CNT 11, 8CNX 82, 8CPC 5, 8CVJ 10, 8CYK 312, 8DHX 4, 8DME 135, 8DNE 10, 8DRJ 28, 8KS 26, 8PJ 16, 8TH 2, 8AOM 49.

WESTERN PENNSYLVANIA—G. L. Crossley, SCM, 8XE—The traffic for the month is very low as would be expected in the summer. All stations have a reduced traffic total which is probably the same in all Sections. More stations reported this month, however, than usual and that is something which seems unexpected. The SCM is keeping watch of stations not reporting and cancellation will result. A number of new ORS will appear next month. RM Anderson, 8GI will do his best to arrange routes or schedules for any ORS wanting. 8GK, 8DNO and 8AGO are inactive during vacations. You may be surprised to see 8ARC, 8DFY, 8BVK, 8BHN, 8DHU, 8CHF drop in on you as they are vacationing and travelling. 8CLV has just moved but will be on again soon. 8JW is being rebuilt at Connellsville. 8CRK has a new chemical rectifier. 8BBL is getting a low power transformer as his went west. 8DKS is having trouble with his transmitter. 8CYP says its too hot and too busy evenings and reports inactivity. 8BRM will be on 20 and 5 with an 852 about the last of Aug. 8AJU is building a master oscillator for 20, 40 and 80. 8CES is building a plug-in transmitter for 20, 40 and 80. 8CFR is doing consistent work on 20 meters. 8APC is rebuilding a 5- and 20-meter set using a UX250, a new 25 watt tube. 8GI says he has a 45-foot chestnut pole 5 inches at the high voltage end and a foot at the base. 8XE is rebuilding some of the works for more kick next fall. Our Director, Dr. Woodruff, is spending the summer at Bay View, Mich., and in California. It is likely that more than one ham is having a visit out west by 8CMP and 8CIK.

Traffic: 8CEO 78, 8GI 55, 8AMU 42, 8XE 34, 8CFR 17, 8DOQ 16, 8OJ 13, 8CES 10, 8BGW 10, 8CYP 9, 8DFY 9, 8DKS 8, 8APC 6, 8CAE 5, 8CRK 4, 8DNO 4, 8AGO 3, 8AJU 3.

CENTRAL DIVISION

INDIANA—SCM, D. J. Angus, 9CYQ—9CLO is rebuilding his crystal set. 9CUD is planning on putting in the crystal he won at the Fort Wayne convention. 9CBT is putting in a 50 watter. 9CMJ and 9CMQ have consolidated and built a new shack. 9DXH raised his power to 15 watts. 9BZZ is trying for a new ORS. 9CNC is going again at a new location with 50 watts on 20 and 40. 9ASX blew his transformer so is off temporarily. 9BCM is on 80 again. 9EGE has been appointed Route Manager. 9DRS will soon be going with a new 50. 9CMV is going big. 9CJU is on regularly and wants traffic. 9CLL is a new station at Muncie. 9DPJ is going again at his new location with the same old crystal. 9BBJ put up a temporary low power transmitter to replace the old outfit that was stolen some time ago. 9CP is going on a round-the-world university trip so asks that his ORS be cancelled. 9DBA is on a trip through the south visiting ham stations.

Traffic: 9DBA 17, 9AIN 2, 9CJQ 64, 9CBT 15, 9DSC 12, 9APG 6, 9CRV 6, 9CLO 2, 9DWE 1, 9CYQ 16, 9BBJ 4, 9CVX 18, 9CMQ 9, 9DPJ 3, 9CJU 12, 9CMV 146, 9EGE 3, 9BCM 7, 9ASX 1, 9BZZ 24, 9DXH 3, 9CMJ 8, 9AEB 3, 9BK 2.

OHIO—SCM, H. C. Storck, 8BYN—The SCM was much pleased with the reporting this month. More of the fellows reported than were expected to, and the traffic totals were better than expected. Conditions during the summer months *are* bad, but old QRN hasn't got the Ohio gang licked by any means, and the SCM wants to congratulate and thank his gang for their continued loyalty and good work. 8BAU again takes high honors for Ohio with 230 messages, obtained by keeping a flock of schedules, and consistent work on 20 meters. 8BPL comes next with 133 which is surely FB. This too, is due to a lot of schedules and consistent operation. For a wonder, 8BYN, the SCM, takes third place this month, making the BPL for the first time in a blue moon. 8BNW is on 75 meters, keeps schedules, is on a trans-con route, and comes fourth this month. 8CAU came back, and by this time is re-instated as ORS. He turned in a nice total, and handled several messages from 8XAM, the transmitter on the Crosley airplane. 8CFL is one of our most consistent stations and does good work. 8BIK is a new station in Columbus and handled 10 messages. FB, OM. 8DIH says every time a couple of thunderstorms come along, everybody shuts down on 80. 8AVB reports queer conditions on daylight schedules with low power. 8BEV is getting splendid results with indoor-Hertz on 20 meters. Someone reported to the SCM that 8BYV had entered the 6th stage, (see report in July, QST) but we hear from HQ and 2APD that he is very much alive. 2APD claims first authentic QSO with the spirit world if he isn't. Hi! Sorry, BYV, wasn't trying to kill you off. Hi! The SCM was in Dayton and saw 8BI-8CXL and had a good rag-chew with him. 8BNA is now using a vertical 20-meter Hertz with good results. 8AKO is again operating 8HB and is going good work from there. 8DBM has finally gotten his set perkin' on 40 and says FB. 8CPQ reports traffic slow there. 8CMB is using 8BFA's set as the latter is still on WNUH. 8CTD keeps a flock of schedules also. 8AEU can't get much time for operating. 8OQ says summer wx and QRN has him down. 8GL turns in 11, but hasn't a word to say for himself. 8DP was waiting at a train crossing and started CQing on the automobile horn, whereupon 8DCG, who was in another machine, (neither knew the other was there) answered him. Hi! They met, and had a regular ham fest, thus proving some value to CQ after all. Hi! 8CQU turns in 8, but has nothing further to say. 8AOE is using a Hertz and getting out FB. 8DJG was on only five days but speared 7 messages. 8DSY has been too busy to be on the air much. 8AYO is on 20 altogether and is working DX there. 8DAE is leaving us to go to Massachusetts where he will be a "1" for two years. Sorry to see you go, OM. 8PL is having good results with new Hertz dope a la 8DEM. 8DEM is now in N. Y. C. with the Bell Laboratories. 8DHS is building a 20 mx set with an 852. 8GZ says it's too hot for radio and QRM (not by his YL tho) is bad. 8AWX is devoting all his time to the coming convention at Youngstown. 8ADH is back and on the air. 8DIA is on every evening, but says not much luck. We are losing 8RY also, as he is permanently hooking up with the 9FO gang, getting out the Citizen's Amateur Call Book. 8BOP is moving again. 8AVX says warm wx has his goat. 8BSC is getting an 852. 8BFA left WNH to hike

to the west coast. Is Life Guard at a swimming pool now. 8BKQ changed his QRH and has not had much luck. 8BBH is building a bigger set. 8BAH will be off the air for the next four months. 8CLR is rebuilding. 8DMX is on 20 mx. 8DC is working in Cleveland, hence the quietness in Ashtabula. It's too bad that we are losing so many good ORS but it can't be helped. There are a good many of new ones being added from time to time tho, and they are all making good. By the time you fellows read this, we will all have begun to think of the coming winter's work, as the worst of the summer will be past. It would be a wise thing to do to get in touch with the RM, 8AU, and get lined up for some routes next fall and winter. The RM complains of lack of co-operation on the part of the ORS. Let him know from time to time what you are doing and the schedules you keep.

Traffic: 8BAU 230, 8BPL 133, 8BYN 112, 8BNW 63, 8CAU 55, 8CFL 44, 8AXS 39, 8DIH 32, 8AVB 29, 8BEV 27, 8BI 22, 8BNA 20, 8AKO 20, 8DBM 19, 8CPQ 19, 8CMB 15, 8CTD 12, 8AEU 12, 8OQ 12, 8GL 11, 8DPF 10, 8CQU 8, 8AOE 8, 8DJG 7, 8DSY 6, 8AYO 6, 8DAE 5, 8ALW 4, 8PL 4, 8DHS 3, 8GZ 3, 8AWX 2, 8DIA 1, 8BIK 10.

KENTUCKY—D. A. Downard, SCM, 9ARU—Considering the small amount of traffic handled and the extreme hot weather we have a good showing. 9BAN is a new ORS. 9ABR is on consistently and continues to work in the 40 meter band. 9OX reports having worked oa2SH on 40 meters. 9ALM is working in Detroit and says the Hertz craze hit the fellows there. 9BAZ has a WE 250 watter perking on 40 meters. 9ATV is waiting on a new crystal and some meters and reports all stations in Lexington inactive at present. 9BWJ is getting R-6 to R-9 reports from foreigners with a UV-202 working in a TPTG circuit. 9KZ is erecting a new 60 foot mast with a Hertz to work on 40.

Traffic: 9WR 30, 9BWJ 16, 9BAZ 16, 9OX 11, 9ABR 11, 9MN 6.

ILLINOIS—SCM, W. E. Schweitzer, 9AAW—There are about 500 to 600 amateurs in Illinois and a traffic report from 36 stations. 52 stations reported but 16 of these did not handle any traffic, but at least they reported. Now we either have a lot of stations not reporting or a lot of dead heads. The latter is the worst of the two evils. Now remember, gang, report each month if you handled one message or a thousand.

9AAE is on the air again working all over the world. 9AEG has been on his vacation. 9AFB is reporting regularly. 9AFF has been playing with 20 meters. 9AFX put up a new Hertz. 9ALJ is experimenting with a static eliminator. 9ANQ is making schedules and promises regular reports. 9APY spent three weeks visiting the Pittsburgh Convention and N. Y., mostly N. Y. we suspect. 9AWX is becoming a died-in-the-wool ham. 9AYB will not be on for the summer. 9AXZ constructed a wavemeter and calibrated it from 9XL freq. transmissions. 9BBA traveled thru the east visiting many amateur stations. 9BFY is reporting for the first time. 9BHM has been sick but will soon be with us again. 9BIZ is trying out a new method of condenser keying to eliminate the key clicks. 9BNA is planning to invade the 20 meter band. 9BPX reports the YLs pounding in R9. 9BRX is so QRW with work he can't find time to pound brass. 9BWL worked en-OJA. 9CIA will be on the air soon. 9CN is working WNP and is installing a 100 jar chem rectifier. 9CNB reports reception very good. 9CSB has been working WNP and is keeping many other schedules. 9CZL reports many new stations opening up in Olney. 9CZX is using a 7½ watter. 9DAF is off for the summer, too much YL. 9DBI is waiting for his new transformer to supply his UX852 9DDE says traffic is hard to find but is arranging schedules. 9DGA worked nc-1AP. 9DKK has been away which accounts for his small total. 9DOX is still rather weak from his illness. 9DWP had his call changed from 9ARM. 9DXG worked nq-2CN and nc-2BE. 9DXZ is on his vacation. 9DYD hasn't his new mast up yet so no traffic. 9EAI is hard at work preparing for the hamfest in Kankakee. 9EDS is now using a 50 watter operating a Hertz indoors. 9EGC and ex9IX have been traveling around the country in a flivver. At present, 9EGC is helping operate 9CN. 9EHK is also vacationing. 9EJO is a new station operating in Geneva. 9ELR has been vacationing. 9IZ is trying a master oscillator circuit and is now also vacationing. Now that the owners of 9KA and 9BA are married, the two stations will be combined and will operate on the 40 and 80 meter bands. 9WJ is not a new ham but the station is new on the air. 9TQ is on the air again and reports the gang still seem to be DX crazy.

Traffic: 9PU 186, 9BFY 83, 9CSB 78, 9AWX 52, 9APY 47, 9CZL 44, 9WJ 35, 9CNB 34, 9AXZ 30, 9AMO 27, 9AFB 24, 9BNA 23, 9DGA 21, 9DDE 19, 9CN 16, 9AAE 11, 9EJO 10, 9EDS 9, 9AFF 8, 9BPX 7, 9AFX 7, 9ANQ 6, 9EAI 6, 9AEG 5, 9EHK 5, 9BWL 5, 9BHM 4, 9DXG 4, 9CXZ 3, 9BIZ 3, 9DWP 3, 9NE 3, 9IZ 3, 9DKK 2, 9QD 1, 9TQ 1.

MICHIGAN—SCM, C. E. Darr, 8ZZ—9CE says WNP comes in there daily on 20 meters. 8DIV has poor luck on 40 meters. 8ADK has a new sink rectifier. 8PF is operating on KGFZ, the Yacht Yoreda. 8AMS is still QRW with the Tourists. 8CEP has his set going again. 8BOK and 8BKC are taking a radio course at Gulf Radio School, New Orleans. 9CM is looking for schdules, help him out. 8AUB is finishing photos between schedules. 8ACU reports tourists too plentiful for much radio. 8DED made the BPL—good for summer! 9CSI is at CMTC at Fort Brady. He is putting in a 40-meter transmitter to QSO hams.

Traffic: 8DED 124, 8ZH 4, 9CE 9, 8ACU 1, 8AUB 3, 9CM 3, 8BOK 41, 8CEP 2, 8ADK 3, 8ZZ 9, 9CSI 11.

WISCONSIN—SCM, C. N. Crapo, 9VD—9SO leads this month using Zeppelin antenna and has schedules with 9AUU, 9DSC and 9DLD. Our RM, 9DLD is keeping five schedules and trying for the BPL. 9BWZ is doing good work and works all parts of the state. 9EMD is another good station operating every evening from 5 to 6 pm on 80 meters. 9LV is the best contact in Milwaukee at present and is on all times of day. 9BWO took 5 msgs from WNP and worked ep1AE on June 26. 9DTK was out of town for the month and unable to handle schedules. 9BPW has changed to CRAC with CX310 and working fine. 9BJY is rebuilding this month during his vacation. 9EEF has schedules with 9CZH on Mon., Wed., and Fri. 9EHM says he has tried 20 with poor results and went back to 40. 9CDT has schedules with 9DLD but is not on much. 9ABM will be at Camp McCoy with the National Guard for two weeks. 9VD also has his vacation this month and will be on the air with a new outfit Sept. 1. 12 stations (of the 17 reporting) handled traffic. All active stations in the Section should get in touch with the Route Mgr. and SCM to help us lead the country as systematic traffic handlers.

Traffic: 9SO 102, 9DLD 70, 9BWZ 62, 9EMD 31, 9LV 21, 9BWO 14, 9BPW 7, 9BJY 6, 9EEF 5, 9EHM 4, 9CDT 4, 9ABM 3.

9OG is QRW getting ready for the AEF trip to France. 9CCL lost the call and is QRW the YL. 9AEB works on 20 meters practically altogether. 9DDZ is apparently off the air. 9ABP moved to a new location and the gang helped him put up a fifty foot mast. 9AUX is QRW baseball. 9BQH is still the most active station in Elkhart. 9AHT is a new fellow located at Goshen and is reported thru 9DDZ as not having much luck with DX. 9AXA is actually building a new transmitter. 9DHM has been referred to South Bend so doesn't have much time to operate. 9BYI is soliciting traffic, hoping for a big total next month.

Traffic: 9BQH 16, 9DDZ 2, 9BYI 7.

DAKOTA DIVISION

SOUTHERN MINNESOTA—SCM, D. F. Cottam, 9BYA—Weather hot, QRN bad, stations being rebuilt, hams traveling and on vacations, consequently traffic is low. We wish this were not so because there are good chances to swell the traffic by handling some tourist msgs., etc. Nice work has been done along this line by some of the stations. There has been a number of amateur visiting, touring and camping in Minnesota during the last month. 9DGE and 9CPM are on the west coast, visiting 6AM and others and then going north along the coast.

It is suggested that amateurs in this Section get together and handle traffic between themselves. There is plenty to keep us all busy if we will knock off the DX and get acquainted with our next door neighbor. Get in touch with 9CAJ and 9EFK who will help you out. 9EFK holds some very nice skeds and is doing some fine DX work. 9DBW handled traffic for the good will flyers and received a personal letter from them with their thanks. 9DBC's shack has been so warm he hasn't been on as much as he would like to be. 9CIY was his guest for a couple of days. 9DMA keeps one sked and works all USA nicely with a 7½ watter. 9AKT has his power supply in the basement,

xmitter on third floor and ops from the second floor, just for convenience. 9CIX is on only nights. 9BHZ was QSO nm51XC, Mexican Aviation Dept.—then blew his 50. 9EFO was putting up a nice stick but something broke and it came down, knocking a corner off his Dad's garage. 9BIY is rebuilding. 9DHP was QSO WNP and took a message from Chicago. FB. 9AIR has also been handling traffic for WNP. 9BYA is down to 20, and can QSY quickly to 40. 9DEQ and 9BYA have lined up a new ham at Champlin. 9GH has been in the Black Hills this month. 9DWO is not in operation at present. He ops at 9WI and keeps one sked, QSRing for WNP. 9IL was one of the first in Minneapolis to QSO WNP, using a 7½ watter. FB. 9COS blew his last good S tube. There was a very nice get-together of hams at Dr. G. W. Swinnerton's (9IL) home this last month. Director Jansky and Mrs. Jansky were among those present. The YLs and OWs were with the OM and a real hamfest was enjoyed.

Traffic: 9EFK 36, 9DBW 26, 9DBC 26, 9DMA 22, 9AKT 20, 9CIX 14, 9BHZ 13, 9WI 6, 9EFO 13, 9BIY 10, 9DHP 9, 9AIR 7, 9BYA 2, 9DEQ 2, 9GH 1.

NORTHERN MINNESOTA—SCM, C. L. Barker, 9EGU—9BTW says that the BCLs got violent so he had to install a key-thump filter. 9CIY now sports two calls and two complete stations, the new call being 9CSU. 9AOK has just finished his new 75 watt set. 9EG has been on some but found no traffic to report. 9BVH suffers from a severe power leak at his new QRA. 9DUV has bad luck on the 40 meter band but reports 20 meter stuff FB. 9CKI says he is getting a new UX852 as soon as finances permit. 9BJD is driving a truck earning money for a new bottle this fall. 9KV wrote his report on a streetcar so he must be very QRW. 9EGU will be off until Sept. 1st on account of unusual amount of business this summer. 9EGN is very busy in the store but finds time to handle quite a few messages. 9EHO keeps on regularly on 20. 9DKR is now in Calif., perhaps for good. 9ABV is building a new MO-PA set using 2 50 watters and an 88 jar chemical rectifier. 9BBT has just got going on current fed Hertz antenna and says its FB. 9CWA works for 9CIY at Hibbing but works his own station every evening and Sundays. 9BAY has absolutely given up hopes of commercial operating after a trial.

Traffic: 9KV 52, 9EGN 33, 9CIY 22, 9CKI 17, 9DUV 14, 9BJD 12, 9BTW 12, 9CWA 10, 9BVH 8, 9AOK 3, 9ABV 1, 9DKR 1.

SOUTH DAKOTA—SCM, F. J. Beck, 9DB—The majority of the stations are on the inactive list due to rebuilding, QRN and vacation trips. We will expect all these stations to be in active operation by September and want reports from all ORS at that time. 9DWN is working at Huron and operates at 9DGR and 9DBZ. 9DGR is on 20 and handles some traffic along with some nice DX. 9DBZ is out visiting the 6's. 9BOW had a msg delivered in Long Beach 10 min. after filing. 9DB managed to dig up some traffic on 20 and 40 and rebuilt the ether buster on top of it. 9NM and 9BOT are QRW corn and alfalfa. 9AJP and 9DES are sporting new 852s. 9CNK is in the Naval Radio School at San Diego, Calif. 9DKL is running a B/C station in Brookings. 9DNS wishes to be put on the inactive list temporarily.

Traffic: 9DB 33, 9BOW 11, 9DGR 7, 9DNS 2.

NORTH DAKOTA—SCM, G. R. Moir, 9EFN—9BVF did some good work on 20 and 40 and led the Section in traffic. 9BJV kept a regular sked with 9BWZ. FB! 9EFN has just returned from Wolverton where he has been building a "high" line and will be pounding brass at the old set soon. 9DYA is just getting going again on 80. 9DM has just returned from Minneapolis.

Traffic: 9BVF 7, 9BJV 4.

DELTA DIVISION

LOUISIANA—SCM, C. A. Freitag, 5UK—Unusually bad weather conditions have prevailed for the past two months and for this reason a good many have not given radio as much attention as they would otherwise. Some have been away on vacations. I hope my next report will show more activity. 5WY expects to be on 40 meters soon. 5IE has been off due to change of QRA. 5KC worked WNP July 5 at 3:30 A.M. while he was at Nova Scotia, and took a message for New Orleans. 5AOZ sent in his first report this month and promises to report regularly hereafter. 5EB was at Boy Scout Camp of the Choctaw Council, where a receiver was installed and regular schedules kept with 5NS. 5NS complains of hot weather and lots of QRM from power leaks, fans, etc. 5PM is now asst. operator on one of the big liners on the Pacific. 5AQF went out as commercial op. but had to return home due to sickness from eating spoiled food. 5QJ works occasionally but due to warm weather and QRN, has reduced his activities considerably. 5UK continues to send nightly press to one of the ex-hams at 9:30 pm each night. 20 meters do not seem to attract many of the boys in this section due to its extreme inconsistency in this part of the country. Most are back in the 40 meter band again with the report that 20 meters is FB.

Traffic: 5KC 4, 5AOZ 6, 5UK 25, 5EB 32, 5NS 37.

ARKANSAS—SCM, Wm. L. Clippard, Jr., 5AIP-ACA—"Our Gang" is sticking it out FB through the summer months and we will have a fine start for this fall and winter. Fellows, we are on top in the Delta Division so sit tight and let's give the others a good race. 5SY and 5AVA are after ORS. 5ANN turned out a few this month. 5SI leads the gang this time with his same consistency. He handled several msgs with the Ford Radio Airplane. 5LV is back on the air again. 5HN built a 250 watt 20 meter set for 5LF. The long expected Belgium xmitter tubes arrived and 5AW, 5ANN and 5HN are the proud possessors of them. 5AUS changed his call to 5BU and likes it much better. 5AQH reports QRM from BC sets bad. 5AIP has a new 80 foot tower which 5IQ, 5AUU, 5AMX, and 5ABI helped him build. If we don't hear 5ER soon, we will know the YLs have something to do with it. Hi. 5ADJ is a new addition to our gang this month. Good, OM, a big traffic total and DX to you.

Traffic: 5SI 45, 5ABI 40, 5LV 13, 5CK 10, 5ANN 10, 5JK 9, 5BU 4.

MISSISSIPPI—SCM, J. W. Gullett, 5AKP—Some promising new A.R.R.L. stations are coming on. 5AUB is headed for Dallas, Texas, on his vacation. 5FQ is working on 20 meters for better DX. 5AGS and 5AQU are operating 5AGM at the boy scout camp. 5QQ says traffic surely is scarce on 40 meters. 5API made the BPL this month by a small margin. 5ANP reports no traffic this month but hopes to be going strong in August. 5TC, a new station on the air, reports handling some Flood Relief messages on 40 meters. 5AIQ is another new station on 20 and 40, who can QSY from one wave to another in one minute flat. 5APO is also a new station on the air at Natchez but failed to report any traffic. 5ARB is about to quit the game for a while. 5AKP moved into his new shack and was going strong for a few days.

Traffic: 5API 102, 5AKP 50, 5QQ 6, 5AIQ 13, 5TC 5.

TENNESSEE—SCM, L. K Rush, 4KM—Things have been at a standstill for quite a time in Tenn. but quite a few stations were visited by the SCM and reports and activities should be forthcoming. 4FI, our RM, handles lots of traffic and is very consistent. 4FA must never stay at home as the SCM has called on him on two different trips to Memphis and he couldn't be located. 4LX promises to be on again Oct. 15, after having completed a 500 watt C-C transmitter to perk on 20, 40 and 80. 4AC has a neat 250 watt station which gets out FB. 4KM has just returned from an extensive tour of the state and found the antenna down.

HUDSON DIVISION

EASTERN NEW YORK—SCM, Earle Peacox, 2ADH-2AXR—A word or two of explanation may soothe the wrinkles on the brows of those who have looked for reports from this section for the past few months without being rewarded very consistently. The real explanation, however, must be obvious to everyone who holds an O.R.S. appointment. A section report cannot be written when individual reports are lacking. The wholesale lack of activity is directly responsible. Personally I am sorry that it has not been possible for me to locate

the time necessary to reorganize the Section in the face of the worst summer slump in five years. Someone who has the time and energy will have to undertake it, and whoever finds it possible to devote a small portion of the perspiration of his brow to the job deserves the cast iron lead-in bushing. Some of you fellows get busy and round up a petition for a new SCM.

2SZ reports that the station will be off the air while the characteristics of a 40-meter antenna are being investigated. 2BOW has been stepping out lately and the cards come in every day. Brannick worked hard to arrive. It's good news. 2ANV will be closed during the summer months because the mercury is too high in the shack. 2CNS is back on the job and is happy to know that a message he started to England via 2BBX actually landed safely. Yonkers, Albany and Schenectady are as quiet as three graveyards. The worst slump in years has hit the Hudson Valley. 2LA is alive and kicking but finds the field deserted. The trouble is not that the stations are out of commission, but that the brass pounders have called a strike. 2ABY reports the station closed until Fall.

Traffic: 2BOW 44, 2CNS 8.

NORTHERN NEW JERSEY—SCM, A. G. Wester, Jr., 2WR—Our traffic total took a bad slump but the number of ORS reporting improved over last month. 2CJX is an ORS and will be remembered from spark days. The job of RM in this Section is still vacant and is waiting any member who will write to the SCM. 2WR is silent due to S tubes departing but a mercury arc is being installed which will be used on 250 watter. 2AT just returned from a long business trip. 2CP has not been able to give much time to radio because his wife is still very sick. 2CW was in communication with KOI which was in the North Sea. 2KA still gathers traffic on 80 when QRN is not too bad. 2ASZ operates at WDWM now located in Asbury Park and we hope that station reaches out like his UX210's. 2ALM says he was on such a good vacation that he forgot entirely about radio and reporting last month. 2ANB is going to the CMTC at Fort Monmouth, N. J. 2ARC is very QRW in a BCL store and not much time for amateur radio. 2BQQ is another who finds it hard to find time to operate. 2CTQ reports that he has been on 20 meters for 2½ years. 2CDR has been away on a vacation. 2BIR is also on a vacation and will not be heard until Sept. 2IS is putting in a new transmitter which he claims will be a real he affair. 2AVK lost his 203A so is getting an 852 which will be on 20 meters. 2QI has a landlord who will not allow him to install a transmitter. 2ADL is going to Washington, D. C., and the South with his portable transmitter on 40 with the call 2AZU.

2GV and 2BAL are working hard to keep the Amateur Radio Assn. of Essex County going strong over the summer months. A banquet is planned for Sept. and those who went last year had a fine time. 2JX handled the bulk of traffic this month which shows how a good schedule will help the traffic man. 2AOP is another, who with a portable xmitter with a 201A pushed 41 messages thru from Lake Hopatcong, N. J. 2GX handled a 156-word message for the Marine Corps at Nicaragua to Washington, D. C. 2AER is leaving to attend M. I. T. and will be heard only during vacation periods. 2AGN has applied for an ORS. 2AGN was QSO the Schooner "Radio," WOBD, which was loading supplies at Labrador. 2CJX is having plenty of fun playing with 20 meters.

Traffic: 2CP 4, 2CW 8, 2KA 6, 2ASZ 10, 2ALM 23, 2ANB 15, 2IS 2, 2ADL 23, 2BAL 5, 2JX 52, 2AOP 41, 2GX 8, 2ADM 3, 2ANG 3, 2UR 3, 2AER 15, 2AGN 4, 2CJX 17.

NEW YORK CITY & LONG ISLAND—SCM, F. H. Mardon, 2CWR—Manhattan: 2EV is doing most of his work on 20 meters and reports very good results. 2KR is on more regularly now. 2ALL is breaking in two new ops so that his station can be in operation while he is at school in Boston. One op is a YL. 2BNL just keeps plugging along. 2BCB is on daily after midnight. 2ANX is very busy with a new car and YLs. 2APV is back on 20 but also has YL and summer complaint. Bronx: 2ALP reports traffic good lately. He does a lot of work with nn-1NIC. 2ALW is doing good work. 2BBX does his usual good work. He tried to pass traffic along to some hams who were CQing but they refused it saying DX was all they were after. Thank heavens, they are not Hudson Div. men. 2CYX says plenty of YLs on the beaches. Brooklyn: 2APD is waiting for his WAC certificate. 2AMI is having trouble with his antenna system since he moved but says it's about all OK now. 2BAZ is very busy with work but manages to get on once in a while. 2ADZ has just returned from a month's vacation and will get going again now. 2PF is at Fort Monmouth for two weeks' active service. 2BO is thinking about arranging skeds for his second op, 11 months old. 2CRB says Mercury Arc can't be beaten when you get it working. Long Island: 2AGU is going along FB. 2ASP is back on the air after a year's vacation. 2ADA, a new station, has started off in the right way and if they keep all their promises, they will sure take some of the BPL laurels away from some of the gang down here. 2ALS is getting his new location straightened out and by fall, he will be all set. 2AWX is very busy with skeds, particularly one with WNP. 2APB-CCD is out in Belle-Harbor for the summer. 2AIZ is having receiver trouble but expects to build a new one soon. 2BSL is at Camp Kun-Ja-Muk with his transmitter. 2AYS says the heat got him. Staten Island: 2CIS is back on the air and looking for Interborough traffic. 2ABO is alive and kicking. 2AKK got his commercial license and is going to sea in a few days. Staten Island is getting to be "The Island of Sea Going Ops." 2AKR is at sea. 2ABH has been off the air for a few weeks but will be back soon. 2CEP is Op on the S/S Swift Arrow. 2AYH's outfit was struck by lightning, everything being ruined but the BCL set.

Traffic: Manhattan: 2ANX 8, 2BNL 6, 2ALL 33, 2KR 64, 2EV 26, 2BCB 9. Bronx: 2ALP 117, 2CYX 36, 2BBX 67, 2ALW 3. Brooklyn: 2CRB 18, 2BO 58, 2PF 5, 2ADZ 1, 2BAZ 7, 2AVR 20, 2AMI 1. Long Island: 2AGU 21, 2ASP 12, 2ADA 17, 2ALS 2, 2AWX 29, 2AWQ 22, 2AYS 3, 2AIZ 46, 2APB 6. Richmond: 2AYH 10, 2ABH 21, 2AKK 3, 2ABO 11, 2CIS 4.

MIDWEST DIVISION

KANSAS—SCM, F. S. McKeever, 9DNG—9BGX was high man in traffic this month with 9CFN and 9DNG tied for a close second. 9BGX says he operates only when the wx permits. He is going west next month but says that unlike 50 watters, he's coming back. 9CFN spent most of the month on 20, but came up to 40 for his traffic. 9DNG is in Calif. for a while. 9CV and 9CNT have been too QRW to operate much. 9CVL is at his summer home and so the dust is gathering on the old tubes. 9CKV and 9AEK have spent most of their time tuning up and experimenting with their outfits. 9AEK having erected a new pole and everything. 9CCS has worked a bunch of Aussies. 9CET lost his mast in a wind storm but will be with us again soon. 9BII is going away for two or three weeks. 9HL can now QSY to 20 meters but his receiver doesn't receive so well down there. 9BUY is busy with details of the coming convention. 9CBX is back on 20 after a try at five meters. 9CFW burned out his transformer so is off for a time. 9BAD still tries to burn out tubes with some measure of success. 9CXL is reported as going back on 20 meters.

Traffic: 9BGX 22, 9CFN 20, 9DNG 20, 9CET 14, 9CKV 10, 9CFW 7, 9BII 5, 9CCS 5, 9CV 3, 9BUY 2.

NEBRASKA—SCM, C. B. Diehl, 9BYG—9AL is QRW summer work and also tinkering with 5 meters. 9CJT is on both 20 and 40. 9CNN says things are fine for summer. 9QY is QRW harvesting his crops. 9EEW is back from vacation and into it again. 9AWS is figuring on going down to 20. 9BYG says not much doing this summer. 9ASD is QRW summer work but says QRV traffic. 9BOQ is busy harvesting. 9DAC is QRX for a tower. 9CGQ has been to Denver on vacation. 9DUH says business only fair with summer. 9BQR says weather too hot and too much QRN for much business. 9EBL getting into shape for fall. 9BOR says plenty of work at the P. O. this summer so hasn't had much time lately and too, it has been too hot to wear the "cans". 9DI is over at Clay Center, Nebr. (KMMJ) assisting with the construction of another ham station which we hope will work better and sooner than ours. 9CJI is trying for an ORS and has started reporting for that purpose.

Traffic: 9CJT 2, 9CNN 9, 9QY 7, 9EEW 5, 9AWS 4, 9CGQ 20, 9DUH 5, 9CJI 26.

IOWA—SCM, A. W. Kruse, 9BKV—9BAT is the star traffic station this month. 9BWN reports crystal control working on 76.4 and 38.2 meters. 9EHN built and installed a transmitter for 9EIW, an Iowa YL, who has recently become one of the gang. FB.

xmitter on third floor and ops from the second floor, just for convenience. 9CIX is on only nights. 9BHZ was QSO nm51XC, Mexican Aviation Dept.—then blew his 50. 9EFO was putting up a nice stick but something broke and it came down, knocking a corner off his Dad's garage. 9BIY is rebuilding. 9DHP was QSO WNP and took a message from Chicago.—FB. 9AIR has also been handling traffic for WNP. 9BYA is down to 20, and can QSY quickly to 40. 9DEQ and 9BYA have lined up a new ham at Champlin. 9GH has been in the Black Hills this month. 9DWO is not in operation at present. He ops at 9WI and keeps one sked, QSRing for WNP. 9IL was one of the first in Minneapolis to QSO WNP, using a 7½ watter. FB. 9COS blew his last good S tube. There was a very nice get-together of hams at Dr. G. W. Swinnerton's (9IL) home this last month. Director Jansky and Mrs. Jansky were among those present. The YLs and OWs were with the OM and a real hamfest was enjoyed.

Traffic: 9EFK 36, 9DBW 26, 9DBC 26, 9DMA 22, 9AKT 20, 9CIX 14, 9BHZ 13, 9WI 6, 9EFO 13, 9BIY 10, 9DHP 9, 9AIR 7, 9BYA 2, 9DEQ 2, 9GH 1.

NORTHERN MINNESOTA—SCM, C. L. Barker, 9EGU—9BTW says that the BCLs got violent so he had to install a key-thump filter. 9CIY now sports two calls and two complete stations, the new call being 9CSU. 9AOK has just finished his new 75 watt set. 9EG has been on some but found no traffic to report. 9BVH suffers from a severe power leak at his new QRA. 9DUV has bad luck on the 40 meter band but reports 20 meter stuff FB. 9CKI says he is getting a new UX852 as soon as finances permit. 9BJD is driving a truck earning money for a new bottle this fall. 9KV wrote his report on a streetcar so he must be very QRW. 9EGU will be off until Sept. 1st on account of unusual amount of business this summer. 9EGN is very busy in the store but finds time to handle quite a few messages. 9EHO keeps on regularly on 20. 9DKR is now in Calif., perhaps for good. 9ABV is building a new MO-PA set using 2 50 watters and an 88 jar chemical rectifier. 9BBT has just got going on current fed Hertz antenna and says its FB. 9CWA works for 9CIY at Hibbing but works his own station every evening and Sundays. 9BAY has absolutely given up hopes of commercial operating after a trial.

Traffic: 9KV 52, 9EGN 33, 9CIY 22, 9CKI 17, 9DUV 14, 9BJD 12, 9BTW 12, 9CWA 10, 9BVH 8, 9AOK 3, 9ABV 1, 9DKR 1.

SOUTH DAKOTA—SCM, F. J. Beck, 9DB—The majority of the stations are on the inactive list due to rebuilding, QRN and vacation tripe. We will expect all these stations to be in active operation by September and want reports from all ORS at that time. 9DWN is working at Huron and operates at 9DGR and 9DBZ. 9DGR is on 20 and handles some traffic along with some nice DX. 9DBZ is out visiting the 6's. 9BOW had a msg delivered in Long Beach 10 min. after filing. 9DB managed to dig up some traffic on 20 and 40 and rebuilt the ether buster on top of it. 9NM and 9BOT are QRW corn and alfalfa. 9AJP and 9DES are sporting new 852s. 9CNK is in the Naval Radio School at San Diego, Calif. 9DKL is running a B/C station in Brookings. 9DNS wishes to be put on the inactive list temporarily.

Traffic: 9DB 33, 9BOW 11, 9DGR 7, 9DNS 2.

NORTH DAKOTA—SCM, G. R. Moir, 9EFN—9BVF did some good work on 20 and 40 and led the Section in traffic. 9BJV kept a regular sked with 9BWZ. FB! 9EFN has just returned from Wolverton where he has been building a "high" line and will be pounding brass at the old set soon. 9DYA is just getting going again on 80. 9DM has just returned from Minneapolis.

Traffic: 9BVF 7, 9BJV 4.

DELTA DIVISION

LOUISIANA—SCM, C. A. Freitag, 5UK—Unusually bad weather conditions have prevailed for the past two months and for this reason a good many have not given radio as much attention as they would otherwise. Some have been away on vacations. I hope my next report will show more activity. 5WY expects to be on 40 meters soon. 5IE has been off due to change of QRA. 5KC worked WNP July 5 at 3:30 A.M. while he was at Nova Scotia, and took a message for New Orleans. 5AOZ sent in his first report this month and promises to report regularly hereafter. 5EB was at Boy Scout Camp of the Choctaw Council, where a receiver was installed and regular schedules kept with 5NS. 5NS complains of hot weather and lots of QRM from power leaks, fans, etc. 5PM is now asst. operator on one of the big liners on the Pacific. 5AQF went out as commercial op. but had to return home due to sickness from eating spoiled food. 5QJ works occasionally but due to warm weather and QRN, has reduced his activities considerably. 5UK continues to send nightly press to one of the ex-hams at 9:30 pm each night. 20 meters do not seem to attract many of the boys in this section due to its extreme inconsistency in this part of the country. Most are back in the 40 meter band again with the report that 20 meters is FB.

Traffic: 5KC 4, 5AOZ 6, 5UK 25, 5EB 32, 5NS 37.

ARKANSAS—SCM, Wm. L. Clippard, Jr., 5AIP-ACA—"Our Gang" is sticking it out FB through the summer months and we will have a fine start for this fall and winter. Fellows, we are on top in the Delta Division so sit tight and let's give the others a good race. 5SY and 5AVA are after ORS. 5ANN turned out a few this month. 5SI leads the gang this time with his same consistency. He handled several mags with the Ford Radio Airplane. 5LV is back on the air again. 5HN built a 250 watt 20 meter set for 5LF. The long expected Belgium xmitter tubes arrived and 5AW, 5ANN and 5HN are the proud possessors of them. 5AUS changed his call to 5BU and likes it much better. 5AQH reports QRM from BC sets bad. 5AIP has a new 80 foot tower which 5IQ, 5AUU, 5AMX, and 5ABI helped him build. If we don't hear 5ER soon, we will know the YLs have something to do with it. Hi. 5ADJ is a new addition to our gang this month. Good, OM, a big traffic total and DX to you.

Traffic: 5SI 45, 5ABI 40, 5LV 13, 5CK 10, 5ANN 10, 5JK 9, 5BU 4.

MISSISSIPPI—SCM, J. W. Gullett, 5AKP—Some promising new A.R.R.L. stations are coming on. 5AUB is headed for Dallas, Texas, on his vacation. 5FQ is working on 20 meters for better DX. 5AGS and 5AQU are operating 5AGM at the boy scout camp. 5QQ says traffic surely is scarce on 40 meters. 5API made the BPL this month by a small margin. 5ANP reports no traffic this month but hopes to be going strong in August. 5TC, a new station on the air, reports handling some Flood Relief messages on 40 meters. 5AIQ is another new station on 20 and 40, who can QSY from one wave to another in one minute flat. 5APO is also a new station on the air at Natchez but failed to report any traffic. 5ARB is about to quit the game for a while. 5AKP moved into his new shack and was going strong for a few days.

Traffic: 5API 102, 5AKP 50, 5QQ 6, 5AIQ 13, 5TC 5.

TENNESSEE—SCM, L. K Rush, 4KM—Things have been at a standstill for quite a time in Tenn. but quite a few stations were visited by the SCM and reports and activities should be forthcoming. 4FI, our RM, handles lots of traffic and is very consistent. 4FA must never stay at home as the SCM has called on him on two different trips to Memphis and he couldn't be located. 4LX promises to be on again Oct. 15, after having completed a 500 watt C-C transmitter to perk on 20, 40 and 80. 4AC has a neat 250 watt station which gets out FB. 4KM has just returned from an extensive tour of the state and found the antenna down.

HUDSON DIVISION

EASTERN NEW YORK—SCM, Earle Peacox, 2ADH-2AXR—A word or two of explanation may soothe the wrinkles on the brows of those who have looked for reports from this section for the past few months without being rewarded very consistently. The real explanation, however, must be obvious to everyone who holds an O.R.S. appointment. A section report cannot be written when individual reports are lacking. The wholesale lack of activity is directly responsible. Personally I am sorry that it has not been possible for me to locate

the time necessary to reorganize the Section in the face of the worst summer slump in five years. Someone who has the time and energy will have to undertake it, and whoever finds it possible to devote a small portion of the perspiration of his brow to the job deserves the cast iron lead-in bushing. Some of you fellows get busy and round up a petition for a new SCM.

2SZ reports that the station will be off the air while the characteristics of a 40-meter antenna are being investigated. 2BOW has been stepping out lately and the cards come in every day. Brannick worked hard to arrive. It's good news. 2ANV will be closed during the summer months because the mercury is too high in the shack. 2CNS is back on the job and is happy to know that a message he started to England via 2BBX actually landed safely. Yonkers, Albany and Schenectady are as quiet as three graveyards. The worst slump in years has hit the Hudson Valley. 2LA is alive and kicking but finds the field deserted. The trouble is not that the stations are out of commission, but that the brass pounders have called a strike. 2ABY reports the station closed until Fall.

Traffic: 2BOW 44, 2CNS 8.

NORTHERN NEW JERSEY—SCM, A. G. Wester, Jr., 2WR—Our traffic total took a bad slump but the number of ORS reporting improved over last month. 2CJX is an ORS and will be remembered from spark days. The job of RM in this Section is still vacant and is waiting any member who will write to the SCM. 2WR is silent due to S tubes departing but a mercury arc is being installed which will be used on 250 watter. 2AT just returned from a long business trip. 2CP has not been able to give much time to radio because his wife is still very sick. 2CW was in communication with KOI which was in the North Sea. 2KA still gathers traffic on 80 when QRN is not too bad. 2ASZ operates at WDWM now located in Asbury Park and we hope that station reaches out like his UX210's. 2ALM says he was on such a good vacation that he forgot entirely about radio and reporting last month. 2ANB is going to the CMTC at Fort Monmouth, N. J. 2ARC is very QRW in a BCL store and not much time for amateur radio. 2BQQ is another who finds it hard to find time to operate. 2CTQ reports that he has been on 20 meters for 2½ years. 2CDR has been away on a vacation. 2BIR is also on a vacation and will not be heard until Sept. 2IS is putting in a new transmitter which he claims will be a real he affair. 2AVK lost his 203A so is getting an 852 which will be on 20 meters. 2QI has a landlord who will not allow him to install a transmitter. 2ADL is going to Washington, D. C., and the South with his portable transmitter on 40 with the call 2AZU.

2GV and 2BAL are working hard to keep the Amateur Radio Assn. of Essex County going strong over the summer months. A banquet is planned for Sept. and those who went last year had a fine time. 2JX handled the bulk of traffic this month which shows how a good schedule will help the traffic man. 2AOP is another, who with a portable xmitter with a 201A pushed 41 messages thru from Lake Hopatcong, N. J. 2GX handled a 156-word message for the Marine Corps at Nicaragua to Washington, D. C. 2AER is leaving to attend M. I. T. and will be heard only during vacation periods. 2AGN has applied for an ORS. 2AGN was QSO the Schooner "Radio," WOBD, which was loading supplies at Labrador. 2CJX is having plenty of fun playing with 20 meters.

Traffic: 2CP 4, 2CW 8, 2KA 6, 2ASZ 10, 2ALM 23, 2ANB 15, 2IS 2, 2ADL 23, 2BAL 5, 2JX 52, 2AOP 41, 2GX 8, 2ADM 3, 2ANG 3, 2UR 3, 2AER 13, 2AGN 4, 2CJX 17.

NEW YORK CITY & LONG ISLAND—SCM, F. H. Mardon, 2CWR—Manhattan: 2EV is doing most of his work on 20 meters and reports very good results. 2KR is on more regularly now. 2ALL is breaking in two new ops so that his station can be in operation while he is at school in Boston. One op is a YL. 2BNL just keeps plugging along. 2BCB is on daily after midnight. 2ANX is very busy with a new car and YLs. 2APV is back on 20 but also has YL and summer complaint. Bronx: 2ALP reports traffic good lately. He does a lot of work with nn-1NIC. 2ALW is doing good work. 2BBX does his usual good work. He tried to pass traffic along to some hams who were CQing but they refused it saying DX was all they were after. Thank heavens, they are not Hudson Div. men. 2CYX says plenty of YLs on the beaches. Brooklyn: 2APD is waiting for his WAC certificate. 2AMI is having trouble with his antenna system since he moved but says it's about all OK now. 2BAZ is very busy with work but manages to get on once in a while. 2ADZ has just returned from a month's vacation and will get going again now. 2PF is at Fort Monmouth for two weeks' active service. 2BO is thinking about arranging skeds for his second op, 11 months old. 2CRB says Mercury Arc can't be beaten when you get it working. Long Island: 2AGU is going along FB. 2ASP is back on the air after a year's vacation. 2ADA, a new station, has started off in the right way and if they keep all their promises, they will sure take some of the BPL laurels away from some of the gang down here. 2ALS is getting his new location straightened out and by fall, he will be all set. 2AWX is very busy with skeds, particularly one with WNP. 2APB-CCD is out in Belle-Harbor for the summer. 2AIZ is having receiver trouble but expects to build a new one soon. 2BSL is at Camp Kun-Ja-Muk with his transmitter. 2AYS says the heat got him. Staten Island: 2CIS is back on the air and looking for Interborough traffic. 2ABO is alive and kicking. 2AKK got his commercial license and is going to sea in a few days. Staten Island is getting to be "The Island of Sea Going Ops." 2AKR is at sea. 2ABH has been off the air for a few weeks but will be back soon. 2CEP is Op on the S/S Swift Arrow. 2AYH's outfit was struck by lightning, everything being ruined but the BCL set.

Traffic: Manhattan: 2ANX 8, 2BNL 6, 2ALL 33, 2KR 64, 2EV 26, 2BCB 9. Bronx: 2ALP 117, 2CYX 36, 2BBX 67, 2ALW 3. Brooklyn: 2CRB 18, 2BO 58, 2PF 5, 2ADZ 1, 2BAZ 7, 2AVR 20, 2AMI 1. Long Island: 2AGU 21, 2ASP 12, 2ADA 17, 2ALS 2, 2AWX 29, 2AWQ 22, 2AYS 3, 2AIZ 46, 2APB 6. Richmond: 2AYH 10, 2ABH 21, 2AKK 3, 2ABO 11, 2CIS 4.

MIDWEST DIVISION

KANSAS—SCM, F. S. McKeever, 9DNG—9BGX was high man in traffic this month with 9CFN and 9DNG tied for a close second. 9BGX says he operates only when the wx permits. He is going west next month but says that unlike 50 watters, he's coming back. 9CFN spent most of the month on 20, but came up to 40 for his traffic. 9DNG is in Calif. for a while. 9CV and 9CNT have been too QRW to operate much. 9CVL is at his summer home and so the dust is gathering on the old tubes. 9CKV and 9AEK have spent most of their time tuning up and experimenting with their outfits. 9AEK having erected a new pole and everything. 9CCS has worked a bunch of Aussies. 9CET lost his mast in a wind storm but will be with us again soon. 9BII is going away for two or three weeks. 9HL can now QSY to 20 meters but his receiver doesn't receive so well down there. 9BUY is busy with details of the coming convention. 9CBX is back on 20 after a try at five meters. 9CFW burned out his transformer so is off for a time. 9BAD still tries to burn out tubes with some measure of success. 9CXL is reported as going back on 20 meters.

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The RM, 9CZC, reports business light and says he will be going full blast by September. 9DOA rebuilt his set and is working on 42 and 83 meters. He goes to CMTC in August. Now is the time to rebuild that transmitter and receiver and get ready for the fall rush! What say, gang, are we going to be ready to help the RM organize a REAL traffic state when the time comes? 80 meters is the plate—let's go!

Traffic: 9BAT 80, 9BWN 25, 9EHN 18, 9CZC 14, 9DOA 3.

MISSOURI—SCM, L. B. Laizure, 9RR—9AAU-ZK had trouble making a 250 watter behave so is using 50 and 7½ watter during the summer. 9BHI complains of few contacts established when he tried 20 meters. 9DUD handled traffic bound for St. Louis from BAM, in Tahiti for his relatives, contact being held for 2 hours. 9DZN went down on 20 meters but not much results. 9ARA had good success on 19.6 meters. 9CVY worked WNP and VOQ. 9HY had an excellent month for traffic. 9NW and 9DTQ are rebuilding. 9AJW moved and is setting up again. 9BZM tried xtal but is now using a Colpitts. 9HY went back to old spark days habit of getting up at 5 am. 9BUE kept usual schedule with 5ES. 9DMT is rebuilding to TG-TP circuit. 9DAE was off all month on account of school and job. 9BQS is rebuilding this month. 9DIX took a job in Chicago and shipped the junk to Windburg on the Lake for future operating. 9EBV, late operator of 9EK, took G. E. job in N. Y. C. 9DSL, lately an Iowa ORS, is going to college in Kirksville but not time to pound brass. 9DNO will be on this fall at Columbia or Macon, returning from Washington where he has been signing 3RS. 9ZD had the misfortune when the power company switched ground on line during his absence in in K. C. but traffic nil. 9RR is rebuilding the works blew up. 9WV and 9BND have been on occasionally in K. C. but traffic nil. 9RR is rebuilding the works and has new antenna and counterpoise finished. C. B. Allen, ex-NKZ, ex-NPM and ex-Unifruitco, is going to pound brass at 9RR as soon as the transmitter can be rebuilt. 9ACX moved and has the set for sale. 9DQN also moved and is rebuilding for TP-TG circuit. 9LI reported via Western Union.

Traffic: 9ZK 54, 9BHI 24, 9DUD 9, 9ARA 6, 9HY 35, 9BUE 5, 9DMT 2, 9ADR 3, 9DQN 3, 9RR 5, 9LI 13.

NEW ENGLAND DIVISION

RHODE ISLAND—SCM, D. B. Fancher, 1BVB—Vacations and the heat have cut in a lot in this state this month. Most of the stations have gone down to 20 meters to escape the QRN and take a stab at DX. Our greatest regret this month is the resigning of our Route Manager, Mathewson of Newport. However, he states that if the gang want to maintain some schedules and handle traffic in the Fall he will take the job back. What say, gang, want him back?

Providence: 1AWE has been on a vacation so hasn't been on. 1MO has at last got the filter working but not soon enough to move much traffic. 1AID is still burning up the DX on 20. 1BIL is having the power changed and has been off most of the month. 1AMU has gone to sea for six weeks. He will be on when you read this. 1EI has got his summer xmitter going and sent in the largest total. FB.

Westerly: 1AAP is dropping to 20. He hasn't had much success so far. 1BVB is now on 20. Due to sickness and business at the theater, not much time has been devoted to radio.

Newport: 1BQD is on regularly but the WX is bad for traffic and DX.

Traffic: 1EI 42, 1AMU 19, 1BVB 17, 1BQD 12, 1BIL 11, 1AID 10, 1MO 6.

VERMONT—SCM, C. T. Kerr, 1AJG—The SCM thanks the boys who are reporting during the season of inactivity and is glad to see them hammering out a few messages. 1BJP gets the star and garter with 12. 1BBJ been to New York so he sez. 1BEB is on 20 regularly week-days. 1FN says 20 is the best yet. He and Doc White paid 1AJG a visit this month. 1IT, CRM, is qrw with his camp on the big lake and fishing.

Traffic: 1IT 3, 1FN 1, 1BEB 3, 1BBJ 4, 1BJP 12.

CONNECTICUT—SCM, H. E. Nichols, 1BM—Our report for the month would seem to indicate a slowing up of activity but from personal observation from your SCM, there seems to be an exceptional interest displayed in view of the many other things that attract us at this time of the year. Some really fine ultra low-wave work has been accomplished and indicates action and endeavor hardly to be expected. The question of wavelength seems to be a vital one in the matter of state-wide communication and it would seem to your SCM that we must concentrate on one wave for this class of work and then use our other bands for DX or experimental. The 80-meter band has proven the most dependable so far but if the majority desire 40 instead, we can try this but at present we are too widely scattered for efficient work, so think it over and let us have your opinion, fellows. 1ADW reports having a chat with oa5BW for over half an hour. 1CTI reports handling WNP traffic with Hdqtrs, also handled lot of local traffic. 1BHM is away for vacation up New York State way and reports things rather slow and says he needs a good man up New London way. Who will be good enough to fill up this gap? 1MY handled quite a lot of traffic for Field Museum and Rawson of Chicago from WNP which would indicate Comstock is still on the job. 1MK reports freaky radio weather at Hartford on "40" but traffic good on 80-meters. 1BWM, 1CTI, and 1BGC did some clever relay work for a Boy Scout Camp located on one of the islands in the Norwalk Harbor. 1BWM made the small portable transmitter and it created a hit with the Scout Executives in view of the fact that constant contact was maintained with the mainland. An accident occurred which required a doctor and 1BGC took the MD to the dock where the injured lad had been brought in by a speed boat and he was promptly cared for. Provisions and many various needs were made available and altogether radio was voted a most necessary adjunct to camp. 1BCA and 1AHG of Ansonia have been playing with 5-meter sets and carried on on experiment with Kruse during a recent call at his home. They transmitted to Kruse's cruising flivver and when it was about six miles away, they told it to return home. It obeyed and Kruse says this is the second msg to be copied in that fashion. Sure fb.

Traffic: 1ZL 1, 1ATG 2, 1CKP 6, 1BQH 3, 1BM 6, 1BJK 6, 1ADW 6, 1BHM 18, 1CTI 27, 1MY 50, 1BGC 39, 1MK 83, 1AOX 85, 1AFB 4, 1BWM 20, 1ASD 30.

MAINE—SCM, Fred Best, 1BIG—1KL takes the palm this month. All but two of his unusual total were handled with WOBD, the SS Radio, on a daily schedule. He was the first ham to tie up with the Radio, and he has been getting thru to the MacMillan Expedition consistently except for periods when WOBD was not able to be on. FB, Bob. 1BIG got back into the BPL after a lay-off of two months when he was very busy. SF worked VOQ at Mill Island which is located at the western end of Hudson Straits. 1ATV is slowly but surely creeping into the BPL class. When 1KL, who lives across the street from 1ATV, cannot tie up with WOBD. Harry opens up with the new 203A and pushes thru the traffic in spite of poor weather conditions. FB, OM! 1AAV has joined the ranks of the Maine Message Pushers and handled a very fine total in the short time he has been on. 1BUB has been sick but manages to be on enough to keep his total up where it should be. 1AQL reports unusually poor weather in Brewer the past reporting month. 1BFZ hasn't been able to be on so much of late but informs the SCM that he plans on making the BPL during August. He reports that 1AMO, at East Corinth, Maine, is coming along fine. 1BTQ has been snowed under with his Express business but handles a few now and then. 1AUR has been moving to a new location and says he won't be able to do much with radio for a while. 1COM reports things rather dead in Norway but this is no doubt due to the usual summer slump. 1ACV reported but handled no traffic.

Traffic: 1KL 235, 1BIG 139, 1ATV 48, 1AAV 42, 1BUB 29, 1AQL 19, 1BFZ 17, 1BTQ 13, 1AUR 4, 1COM 1.

EASTERN MASSACHUSETTS—SCM, R. S. Briggs, 1BVL—The summer weather has not had any serious effect on activity in this Section. A lot of the fellows are beginning to take advantage of the 20 meter

band with its general lack of QRN. 1ACH leads in the BPL with 1ACA and 1UE following. Many sent in reports though temporarily inactive. That's the spirit.

1FL returned home after a 4500-mile auto trip visiting hams. 1KY says she expects to be on the air again during August in R. I. 1ACA is moving and will be on with an 852 next Sept. 1AXA handled quite a bit of traffic with WOBD, the schooner "Radio" of the MacMillan Expedition. 1NV had quite a time persuading a 203A to oscillate OK on 20 meters. 1NK is working in a bakery and handles a lot of "dough". Hi. 1AIR is still off the air, overhauling his set. 1LM says that messages are scarce. 1ADM handled traffic with WNP and was on 80 meters again with fone. 1BMS worked the *"C.G.S. Stanley"* with the call VDE. 1BVD had trouble getting traffic but did some experimenting. 1BZQ worked NIDK and WNP. He hopes to have a new stick up soon. 1UE, the R-M, kept a few schedules. 1IA and 1UE handled a long message from ef8FT concerning 5-meter tests. 1IA arranged to get in touch with his daughter in Paris via ef8CT. She was at ef8CT during the QSO. 1YC kept schedules with 1BJL and 1AIQ. 1APK built a neat (portable) transreceiver which he used on a vacation trip in New Hampshire. The crystal control set at 1RF has been perking in spite of cracked crystals. The BCLs are still after 1AVY. 1NQ has been staying at Newport, R. I., and visits 1BQD often. 1AHV went to New York to look for a ship so he can blast the air on 600 for a while. 1ACH was very active and was on 20, 40 and 80 meters.

1BVL had plenty of spare time for a change and worked WNP on schedule. A 50 watter has been in action on 20, 40 and 80 meters. 1BKV worked quite a bit of DX on 40 meters. 1ABA worked WNP and says that 1AYO has received a daughter. Many congrats, OM! 1PB made a 15 day cruise on the *"U.S.S. Flusser"* with the Naval Reserve and had a fine trip. 1AWB was on 40 meters and telephoned his report. 1RY is trying for an ORS—is having great luck on 40 meters. 1BYV worked WNP while the latter was at Nain, Labrador. He also says that a coal truck ran into his counterpoise twice.

Traffic: 1ACH 114, 1ACA 111, 1UE 100, 1KY 73, 1BZQ 62, 1ATR 49, 1FL 40, 1RY 39, 1BVL 35, 1ABA 31, 1BVY 20, 1YC 19, 1PB 19, 1ADM 18, 1AHV 16, 1AXA 15, 1BKV 10, 1BJL 10, 1NK 6, 1AWB 6, 1AVY 6, 1LM 5, 1RF 4, 1NQ 4, 1NV 3, 1BDV 1.

WESTERN MASSACHUSETTS—SCM, A. H. Carr, 1DB—1AAC says that all the msgs he handled this month were for the MacMillan Expedition. He has had excellent contact with WOBD every night at 10 EST. 1AAL has also been QSO WOBD and handled some of their traffic. 1AJM is going on the air on 80 soon with the 50 and will keep his small set on 20 meters. 1AKZ says he has worked all countries and that his 20 month old UX210 is still going strong. 1AMZ gets reports all the way from rotten AC and rect. AC to DC. 1AOF has kept several schedules and is on the air on 41 meters every day. 1APL has kept schedules also but says that hot weather and a motor-cycle has kept him off the air. 1ASU connected WNP with eb4WW. 1BIV is on 20 and QSO Europe nearly every night. 1BVR complains of lack of traffic. 1DB has been keeping schedule with 8KR at Walton, N. Y. They both worked one night through one of our many electrical storms. 1AZD has received his WAC certificate. 1WQ is on 80 meters daily from 6 to 8 pm.

Traffic: 1AAC 76, 1AAL 35, 1AJK 3, 1AJM 11, 1AKZ 7, 1AMS 2, 1AMZ 25, 1AOF 22, 1APL 34, 1DB 9, 1AZD 17, 1WQ 6.

NEW HAMPSHIRE—SCM, V. W. Hodge, 1ATJ—Only 50% of the ORS reported this month. Remember, gang, failure to report for three months means cancellation. 1IP has been out in the country but took his set and handled a nice bunch of traffic. 1JN is on some with a UX210. 1AOQ promises to be on soon. 1BFT is still doing fine work on four wavebands. Together with 1AAV, he handled important news about Lindbergh's forced landing at Concord. The SCM's big antenna came down but a temporary one is doing good work. 1ALY is working on a farm. 1AVJ is using a 203A now.

Traffic: 1IP 77, 1BFT 65, 1JN 20, 1ATJ 4.

NORTHWESTERN DIVISION

OREGON—SCM, R. H. Wright, 7PP—7AEK rates the BPL again, due to regular skeds. He expects to rebuild, using DC on his 250. 7MV has been experimenting with voltage feed and has had good results. 7LT is using a zep and says it's FB. 7NP is coming back on 20 and 40 with tuned plate, tuned grid. 7ME is experimenting with antennas and keying systems. 7MH will be on soon with an 852 on 20 and 40 meters. 7IT is erecting a new antenna for 20-meter work. Although 7AIX has trouble in getting out, he manages to hold a twice-a-week sked with na-7KH. 7ACG, a new ORS, is looking for an early morning sked. 7MF has a new xmitter and is working out in fine shape.

Traffic: 7AEK 201, 7AEC 28, 7AIX 22, 7OH 10, 7LT 8, 7MV 4, 7ACG 14, 7MF 39.

WASHINGTON—SCM, Otto Johnson, 7FD—7LZ takes traffic honors this month doing some real good work on schedule. 7AM has also done some nice traffic work. 7FD handled several schedules but not much traffic. 7DF is QRW with ranch work. 7EK and 7KO are vacationing. 7UQ is working on the SS H. F. Alexander (not as an op tho.) 7VL is on the job and sends a newsy report. Tnx, OB. 7AEP got stranded up in the mountains without food but 7ABX answered his SOS and sent help (and food?) 7UH is "boning" for a commercial ticket. 7RL says "Raw AC worked all continents again." 7AG has a new 1500-volt generator. 7TX works both 20 and 40 as do many of the gang. 20 meters seems to be gaining many boosters out here. Use all bands and work anytime! Mason and Hemrich came back from Alaska and took a trip to Mount Rainier and found radio conditions 100% better than down around Puget Sound. Guess we'll all have to "climb the highest mountain." Hi.

Traffic: 7LZ 36, 7AM 29, 7FD 11, 7VL 10, 7DF 10, 7TX 6, 7RL 6.

MONTANA—SCM, Orville Viers, 7AAT-QT—7EL is still busy on the ranch and says "This western work isn't what the novels say it is." Hi. 7ZU says the fish are biting too good for ham radio work but several hams touring the country have stopped to see him. 7AFM is also on the ranch and very busy. 7AAQ has been touring the country and reports seeing 700 ham stations in the last two months. FB. 7AFP is stil busy and hasn't had much time to do anything with the stations. 7AAT-QT has the station on the air and is all set to go. I must remind some of you fellows again about your ORS tickets. Failure to report too many times will make the ticket look rather sick. Let's get the reports in on the 26th of each month from now on, gang!

Traffic: 7AFM 6, 7AAT 4, 7EL 3.

PACIFIC DIVISION

HAWAII—SCM, J. A. Lucas, oh6BDL—6DJU, a new station, has recently come on with a fifty and is doing fine work. 6BWV is going to move so will be off for some time. 6DCU is getting out with AC supply. 6BDL is not on 40 much and very little traffic on 20. The SCM expects to leave OH November 15th for the mainland so is going to submit his resignation. Look around, fellows, choose the new SCM so I can turn things over to him before departing.

Traffic: 6DCU 11, 6DJU 46, 6BWV 44, 6BDL 18.

LOS ANGELES—SCM, D. C. Wallace, 6AM—We are very pleased to find that this month's report contains three more reporting stations than ever before during the time the present SCM has held office. Six stations made the BPL. 6BUX worked gi-6MU in Ireland during the eclipse of the sun there. It is a pleasure to note that 6BJX handled 184 messages during the month in which he took his vacation. 6CQP is some kind of a movie star these days. 6BZC and 6ABN succeeded fairly well in playing Tit Tat Toe over the air. 6BZR is now rebuilding. The list of schedules that he sent in is a treat for sore eyes. 6DDO has been keeping a long time schedule with KNT and this month, has been relaying the messages directly to nu-2UO, a rather difficult thing to continue with on this coast. 6CQM, whose fine report of last month, got in just too late for us, comes along with another good one. 6BXD is active in the Pasadena Radio Club which now has almost fifty active members. 6ZBJ is on the air in spite of the fact that his motor generator burned out. 6BZC, one of our new men, comes along with his first re-

port. 6BFP turns in a report which states that 80% of his traffic was with the Hawaiian Islands. 6QL is converting almost all of the San Bernardino district, including the BCLs, to amateur radio, so we expect a number of new transmitters. 6AGR handled a remarkable five minute relay direct to eb4WW. 6AHS just moved into his new shack. 6PY has his new plug-in transmitter going. 6BVM is trying to mix gasoline with amateur radio. 6CAG comes along with his first report. He has real QRM, as he has pneumatic hammers across the street. 6AWQ, 6CZT, 6BGC, 6NW, all come along with reports we like to see. 6CHT is now a commercial op and hopes to go to sea. Quite a number of the men are going to study for commercial ops. 6AKW evidently has the most Australian schedules of anybody in this Section. 6DEG made a shielded monitor set a la *QST* using the OW's best aluminum lunch pail. 6IH, 6CDY are still on the job. 6CMQ has crystal control. 6BRO reports power leak, something which usually drops out when a little static comes along to drown it out. 6RF, 6BHR, 6ACG and 6DAI are inactive. This Section was fortunate in having a visit from Director Babcock this month. Director Babcock was on a yachting trip and came down here to deliver an address at the Long Beach Rotary Club. We certainly appreciate both the informal and regular visits of Dir. Babcock as he certainly does correlate the activities of this division.

Former Division Mgr. McCreery plans to have a good amateur station once more and we hope that more of the old-timers will come back. 6CQM and 6ALZ were late in last month's reporting as well as a good many others.

Traffic: 6BUX 245, 6BJX 184, 6BHI 141, 6CQP 130, 6AM 102, 6BZC 112, 6BZR 87, 6DDO 68, 6CQM 61, 6BXD 49, 6ZBJ 51, 6BZC 46, 6BFP 46, 6QL 33, 6AGR 30, 6AHS 25, 6PY 25, 6BVM 24, 6CAG 25, 6AWQ 24, 6CZT 19, 6BGC 17, 6NW 13, 6CHT 11, 6AKW 10, 6DEG 9, 6IH 8, 6CDY 6, 6CMQ 2, 6BRO 1.

EAST BAY—SCM, P. W. Dann, 6ZX—Asst. SCM, J. H. MacLafferty, 6RJ—Reports came in FB this month and the Asst. SCM thanks you fellows who are keeping the ball rolling through the summer months. Activity seems to be on the increase, judging by the frequency of hamfests, joint radio club meetings and excursions to neighboring stations. We are sorry to learn of Col. Dillon's illness. Best of luck to you, OM. Who's going to win the "Idalia" cup? A silver cup is to be awarded to the amateur station establishing the most frequent communication with the Idalia's station KFVM whose operator, 6OC, is arranging schedules before the yacht leaves on the cruise to Mexico and Central America. The tentative program of the San Diego A. R. R. L. Convention has stirred up new interest in the Oct. event and the East Bay will be well represented there. Visiting hams this month were 8BIT and 8BQS from Pittsburgh, Pa., and 6DJI and 6CDZ from Reno, Nev. Come again, OMs.

RM, 6APA, has been cooperating 100% with the C.D. in keeping a live interest in the traffic net plan. Your RM's QRA is 2624 Best Ave., Oakland, Calif. 6AYC wins the traffic honors this month, even if the second op at his station is a YL. Hi. 6ALX reports a total of 50 msgs. this month, also the installation of a new mast. 6CZR's 7½ watter went west and a new 50 took its place. 6AMI says no luck with TPTG and is going back to Hartley. 6RJ was QRW entertaining 8BIT and 8BQS this month but managed to keep his schedules. 6BER handled traffic for KGEG and reports traffic is good on 40 meters. 6CMI, an old ORS, is at 6BJF in Phoenix, Ariz., and wants to hear from some of the gang. 6AKF has moved again. He is at the Fairlawn Hotel. 6APA has kept his schedules and cleared the message hook before leaving on a short vacation. 6EY handled about 500 words from Army station AW5 at Dayton, Ohio, re the recent Trans-Pacific flight. The op at AW5 is Lt. Roberts of op1HR. 6BHM, new ORS, is going to show 6RJ and 6AYC how to move traffic. 6BHX reports plenty of traffic from OH on 40 but says he doesn't get out of the back yard on 20. 6AFT shows the right ham spirit for forwarding on Form 1 written with his left hand, due to bad wrist sprain. 6ALV is rebuilding for 50 watts with remote control.

Traffic: 6AYC 76, 6ALX 50, 6CZR 44, 6AMI 22, 6RJ 21, 6BER 16, 6APA 14, 6EY 13, 6BHX 6.

ARIZONA—SCM, D. B. Lamb, 6ANO—6CUW and 6CAP have been cancel'ed for failure to report. Very sorry to have to do this OMS but, remember the law. 6CDU hasn't handled much traffic for the last 10 days on account of QRN. 6CBJ decided to go and see his girl in Wisconsin so the results were he sold his radio stuff to raise the jack. 6BWS has been QSO lots of Hu stations. 6ASA is putting up his 50. 6AZM is going to experiment with different transmitting circuits. 6BJF reports hearing a Dutch mail ship near South America on 20 meters. Also hooked up with WNP. 6DCQ is gone on a two weeks vacation to Morman Lake. 6ANO reports QRN fierce. 6DIE is getting out well with his 7½ watts.

Traffic: 6ANO 38, 6BJF 51, 6AZM 2, 6BWS 57, 6CDU 77.

NEVADA—SCM, C. B. Newcombe, 6UO—6BTJ left the coast fog and is now basking in real Nevada sunshine at Verdi. Of course, he brought the junk h.ap along and reports July traffic. 6ABM is working mostly on 40. 6GA just returned from a trip to Yosemite.

Traffic: 6ABM 24, 6GA 6, 6BTJ 3, 6UO 5.

SAN DIEGO—SCM, G. A. Sears, 6BQ—6AJM leads in traffic this month, regular skeds doing the trick. He recently was visited by 6RJ, 8BIT and 8BQS. 6BQ finds but little time to pound brass. 6BXN reports traffic picking up since he got his rect. going good. 6FP, in addition to other duties, has been appointed O-O. 6QY is a new ORS but an old timer on the air. 6ANC is on vacation in San Diego getting relief from heat of Imperial Valley. 6BAM reports traffic scarce, he's working both 20 and 40. 6OX is on the air Mon., Tues. and Thurs. 6SB is still bothered with power leaks. 6SJ is going to try 20 but won't leave 40 entirely. 6HU is leaving on vacation in high Sierras soon. Will take portable and use his calls, 6AAF and 7SL. 6BFE lost his skeds and waiting for a new ticket. 6BAS is QRW grinding crystals. 6MB says QRW. What's her name, OM? 6CTP reports his batteries gone. 6WK reported heard in La Jolla recently. 6CYI is on with a 7½ watter since his 50 departed.

Traffic: 6AJM 53, 6BQ 47, 6BXN 25, 6FP 21, 6QY 16, 6ANC 14, 6BAM 14, 6OX 11, 6SB 8, 6SJ 6, 6HU 4, 6BFE 3, 6BAS 2.

SAN FRANCISCO—SCM, J. W. Patterson, 6VR—Traffic reports took a big flop this month in the Section due to heavy QRN. Why not try 20 meters and be satisfied? 6HJ leads in traffic by hard work and a heavy sked. 6CXI is a rising and promising ORS. 6KW blew his 1 KW bottle and is off temporarily. 6BIA is buying a new 75 watter and all the gang is wishing him luck. 6GW, the banker, has several 50's now and is having the power company move the lines away from the shack. 6WS, pride of Sonoma Valley is shunning radio for the fair sex. 6VR is now on with his Master Oscillator on 20 meters. 6DEK just returned from vacationing and is making things hum. 6CCR is still minus a bottle.

Traffic: 6HJ 42, 6CXI 40, 6KW 39, 6BIA 30, 6GW 28, 6WS 15, 6VR 10, 6DEK 2.

PHILLIPPINES—SCM, M. I. Felizardo, op1AU—This report received by radio via op1AU and nu6BVY—op1HR still keeps piling up traffic and makes the BPL again. He has an AC and DC transmitter. op1AT says very QRW, hence very little activity. op1AU's traffic slumped this month as he is very QRW building a Hydro-electric plant outside of Manila. He expects to leave the P. I. soon and park in Boston, Mass., for some time. He leaves op1AT and op1DL to continue his skeds with nu-6BVY.

Traffic: op1HR 340, op1AU 84, ap1AT 5.

SANTA CLARA VALLEY—SCM, F. J. Quement, 6NX—Kindly note change in your SCMs address to 252 Hanchett Ave. Summer hit this section hard this month with the result—the poorest showing yet—nine stations reporting and 128 messages handled. Let's have a 100% report next month. After a three weeks' vacation, 6AMM started off with 58 messages in 4 days. He is handling 6BJX's sked with op1HR in addition to his regular OP traffic. 6BVY was on his vacation this month. 6BMW reports QRN very bad and kenetron trouble. 6CSX maintained his sked with oh6BUC. 6CXY and is a reliable outlet for all OH traffic. 6AZS patiently waiting for the mail man to bring his WAC cards in. 6BLT broke into the traffic game again this month after a long term at school. 6CJD and 6CTE had hard luck with their sets. 6CLP reports ND on 20 meters. 6BYH is lining up a new station for ORS.

Traffic: 6AMM 58, 6BMW 29, 6CSX 19, 6AZS 14, 6BNH 4, 6CJD 3, 6BYH 1.

SACRAMENTO VALLEY—SCM, C. E. Mason, 6CBS—6BHQ is going to move and will be QRW until then. Will send in application for ORS.

Traffic: 6CBS 52.

ROANOKE DIVISION

WEST VIRGINIA—SCM, C. S. Hoffman, Jr., 8BSU—8DCM handled some nice traffic with WNP, also getting an R8 report from WNP. 8CYR has schedules with 8AWV, 8DIC and 3LC. 8ACZ worked oa-2UK. 8BJB has schedules with 7HW, also worked many foreigners with the new set. 8BBM is at Fort Bragg, N.C. 8AGI operates at 9DUT. 8DPO worked oh-6AKP on 7½ watts. 8CNZ is a new ORS. 8BSU spent a week on board ship, VEF, vacationing. There seems to be a general slump in state work and it would be appreciated if the gang would show the "old time spirit" of enthusiasm and the handling of messages.

Traffic: 8DCM 24, 8BJB 11, 8CYR 17, 8DPO 10.

NORTH CAROLINA—R. S. Morris, SCM, 4JR—4EC hasn't been on much except on 20. 4AB is doing the best work in Greensboro in many years. 4PP won't be on much until after the tourist season. Activity is lax at 4BX. 4VJ is a new station at Highlands. 4OH went to Florida for a vacation. 4JR doesn't hit the key much this hot weather. 4OC is rebuilding his keying system. 4TS and 4SJ have been at Camp Jackson for ROTC camp.

Traffic: 4AB 22, 4SJ 17, 4OC 16, 4PP 16, 4TS 11, 4VJ 8, 4EC 7, 4OH 4, 4JR 3.

VIRGINIA—J. F. Wohlford, 3CA—3AHL claims QRM from job and YLs but handled a few. 3UX was sick and did very little work. 3AG has rebuilt receiver and transmitter and was QSO oa3VP and su1BR. 3NM-3DL rebuilt the station but complain of QRN. 3RL is back on air on schedule nc3RG. 3BGS went to Pittsburgh convention. Reports big time and talks xtal control. 3BZ works 20 meters now. 3CKL has gone to Fort Monroe with Coast Artillery Reserves. 3CA has the old four-coil Meissner perking on 80, 40 and 20 meters. 3BDZ is still hammering away at the xtal set.

Traffic: 3AG 25, 3UX 20, 3AHL 22, 3BGS 10, 3RL 6, 3NM-3DL 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, C. R. Stedman, 9CAA—It is with considerable regret that we announce the resignation of 9DSU as ORS. He promised to be one of the best traffic men in the state but had to leave rather suddenly for other parts on business and the move is permanent. 9CAA fell down on his promise to make the BPL this month due to the east schedule falling thru. As soon as 9PU returns from Calif., it will be resumed. 9EEA is too QRW business to do much with ham radio just now but is there with all the spirit. 9CJY is planning a 5-meter station. 9BYC is back again a trifle sooner than was expected. 9CAW, while boating on a lake one night, whistled a CQ and found over half a dozen other hams out there also and none knew the others were present. Hi. Reports are that 9BQO is surrounded by pigtails and freckles in the town he is visiting in Illinois. Hi. 9CDW says too much wine, women and wireless. 9DWZ is moaning about poor delivery of mags he starts. Keep on trying OM, one should get thru eventually. 9CDE is still minus an MG and so off the air. 9OO has been on his vacation but says things will pop from now on. 9QL and 9DED say ND. 9DGJ is on considerable but traffic NG. The YL of 9BDF is now 9CCM and is on daily in the early evening with a 50 watter. 9CAT is a new station at Pueblo.

Traffic: 9CAA 86, 9DSU 70, 9CJY 30, 9BYC 22, 9CAW 7, 9CDW 6, 9DWZ 4; 9EEA 2, 9DGJ 1.

UTAH-WYOMING—SCM, D. C. McRae, 6RM—Not a great deal of traffic was handled this month due to many of the fellows being away on vacations. The SCM was away during the month on his vacation, which was spent in Calif. Two new stations are coming up in Wyoming and we hope to see some good work from them. A Route Mgr. will be appointed shortly to take care of Wyoming as there is a need for one. 6AIK handled a few but reports he has a new car. 6BUH comes thru this month with a good report. This time it's different, he had a vacation so he pounded the brass. 6RV has a 210 going now but doesn't seem to have much luck on 20 lately. 6RM will be on 20 most of the time as it works out very good for daylight work. 7DA has been rebuilding but managed to get time to put a couple thru. 6CQL is still in Idaho but gets on once in a while with his portable 7VO.

Traffic: 6BUH 26, 6RV 17, 6AIK 4, 7DA 2, 6RM 1.

SOUTHEASTERN DIVISION

FLORIDA—SCM, C. E. Ffoulkes, 4LK—Well, fellows, I certainly appreciate the co-operation you have given me while I was acting as SCM. Thanks. We have a number of new stations reporting this month. 4NE has a dependable sked with nq5AZ. 4VS has an emergency power supply—must be looking for another storm in Miami. 4CJ walks a mile to his shack at 4 A.M. for his OA & OZ DX. 4CK has an ideal shack on top of his Apt. 4LK kept sked with the S. S. Beothic (cVYG) QRD the Arctic. NRRG clears Naval Reserve tfc with 4IZ, 4BG, NRRL, etc. 4AAO is reported FB in Jamaica at noon on 41 meters. 4RK is a new ORS in Miami and is doing fine work. 4OB and 4TK say that their new location is "hot stuff". 4MS will be a new ORS in Pensacola soon. 4HY is waiting for an 852. 4IG is away for the summer.

Traffic: 4NE 74, 4VS 51, 4CK 42, 4LK 42, 4AAO 34, 4RK 16, 4CJ 11, 4OB 10, 4MS 4, 4TK 2, 4HY 2, NRRG 34.

ALABAMA—SCM, A. D. Trum, 5AJP—A little action was forthcoming from inquiries sent out by the SCM for traffic figures. 5LU is working 2 210's now and getting out all over the country. 5DI keeps that regular schedule with his brother in Panama, also with nz-EZ5. 5VX is putting in a 203A and going strong. 5AV has been experiencing trouble with almost everything from tuner to antenna. 5WQ and 5AXN are new stations in Birmingham. 5AX is down on 20 now and reports FB. 5MI is gradually coming back and doing splendid work. 5ATP is on now with a fifty and a sync. 5JY runs 3 210's in parallel. 5JP went to BSA camp this month on account of business. 5ADA is on every Sun. now due to his job during the week. 5ANJ is on consistently now and is getting out fine. 5NL bought 5AFS's set and now is putting a pure DC sig on the air. 5ABS promises a better report next month. 5DF is on the air with 15 watts. 5AGA is rebuilding and tells us he will be on soon with a good sig. 5DL says there isn't much doing in Mobile. J. W. Hudgins, 5AYL, is a new one in Huntsville, who promises some good activity and plenty of traffic. 5OA sold his plate transformer when he got hard up and now is waiting for another.

Traffic: 5ADA 35, 5ABS 5, 5ATP 42, 5NL 21, 5ANJ 34, 5JY 61, 5JP 19, 5LU 19, 5DI 35, 5AV 11, 5DF 9, 5AX 34.

GEORGIA-SOUTH CAROLINA-CUBA—SCM, H. L. Reid, 4KU—Porto Rico: 4KD reports that he is on as usual. 4AAG is getting an H tube. 4AAG visited 4SA and is now a 20 meter convert. 4JA is getting active with two 210s and a fifty with a mercury arc. 4KT's mercury arc is the stuff. 4JE is on once in a while. South Carolina: 4EI is on again after a trip. 4IT has been off due to summer school activities. Georgia: 4GY still uses a fiver on 40 meters. 4TU is a coop at Tech and is only on during week ends. 4RN worked WNP and so many others that it looks like calls heard.

Traffic: 4KD 5, 4EI 3, 4GY 21, 4TU 11, 4RN 19.

WEST GULF DIVISION

OKLAHOMA—SCM, K. M. Ehret, 5APG—No pep and too many vacations and yet we have a fair report. If half of those stations active would let us know what they are doing, we would make 'em sit up and take notice. 5ADO is back in Cushing and promises to be back on 20 shortly. 5AEQ is disgusted with amateur radio because he can't raise an ORS appointment. (Best cure for this is to report regularly). 5ASK—no oscillations but plenty of oscullations—YLs, nuf sed. 5DQ hooked WNP but reports sigs swinging so badly he couldn't get the ORA. 5ANL has been away on a vacation and has returned with the avowed intention of trying a Hertz on 40 as a last resort. 5AKA is QRW with KGCB. 57AV is still trying to get suitable plate supply for the 852. 5QL is on his vacation, rebuilding his receiver to keep pace with the transmitter. 5SW presides as chairman of the daily hamfest held in his shop by the Oklahoma City gang. 5AAV is still playing in Denver with the YLs and bugs. 5AFX puts out a wicked signal and works 'em. 5AYO has many pleasant QSO's with his UV201A. RM 5FJ

worked steadily this month and chalked up ng2AW, nr2ZJ, CX6, OJA, nr2FG, WNP nmgx. 5ABO gave us a report from the 176-meter band. He has moved to Tonkawa. 5PC is working hard on the farm this summer but hopes to join the gang again in the winter. 5VH is on the air daily but has no DX to report yet. 5ANT works consistently. Let's wind up the last summer month with a keen report, fellows, so don't forget to send in your next report promptly.

Traffic: 5ANT 15, 5AIR 20, 5FJ 211, 5AFX 1, 5SW 4, 5APG 4, 5VH 10, 5ABO 27, 5DQ 4.

SOUTHERN TEXAS—SCM, E. A. Sahm, 5YK—The third Annual Hamfest of the Bexar County Radio Assn. was well attended. Among those present were the RI, L. J. DuTreill, Lt. Teague of the Sig. Corps, F. M. Corlett, Division Director and the SCM. All had a most pleasant time. The technical talk of the evening was given by the instructor of Vocational Electricity at Main Ave. High School.

5UX is back on with his two ops. 5RR is rebuilding. Fred Kush is with us again after an absence of several months. 5ZAE is working on a set again after an absence of over a year. 5AHP is now working on 20 meters. 5EW paid the SCM a visit and made his report orally. Bob Sharp also recently paid the SCM a visit. He reports having an Australian visitor. 5ALA is also back. 5ABQ is also rebuilding. 5PK has been on a vacation. 5MU has rigged up a TP-TG affair. 5AUA has moved to 2712 Fernwood St., the highest point in the country. He reports reception much better already.

Traffic: 5MU 3, 5AHP 11, 5ABQ 3, 5UX 9, 5AUA 4.

CANADA

MARITIME DIVISION

PRINCE EDWARD ISLAND—F. W. Hyndman, 1BZ—1AP, star station this month, although traffic vrey light he has worked Brazil, Italy, Norway, and England all on 20 meters. 1AA is a new station at Charlottetown. He will be heard frequently this fall.

Traffic: 1AP 1.

NEW BRUNSWICK—SCM, T. B. Lacey, 1EI—There has been very little doing in N. B. the last month on account of the warm days and holiday season. Many of the gang have been visiting brother hams in the Province and a few Nu hams have drifted in. Reception is not good even on 20 owing to bad QSS and QRN. Some of the gang are forgetting to report but we have a hunch they could report the price of gas OK. Hi. nu9BBA dropped in on the St. John gang and swelled their message total. Other visitors were 1AM and 1AN. 1AM reports nothing unusual doing for DX or QTC and experimenting on 5-meter reception. 1AD isn't settled in his new home and is trying to get his seven aerials put up as before. 1AX has been on a little but finds DX difficult and no QTC. 1AK is moving to new quarters and will not be on for a few weeks. 1EI has rebuilt his transmitter and is going to give 80-meter fone a try. He hears WNP often.

Traffic: 1AX 2, 1AK 51.

ONTARIO DIVISION

ONTARIO—SCM, W. Y. Sloan, 9BJ—3DB HOPS POND AND COPS SHIELD. HAMILTON NOW HAS XTAL CONTROLLED TRANSMITTER.

A general reorganization and clearing out of considerable dead-wood among the ORS is in progress throughout the division and by the time this appears, things will be ship-shape again to hop right into the fall activities. 3DC has his crystal perking along OK and is not going to attempt any further rebuilding. 3BZ is still under the weather and has not been heard before the snow flies. 3BT sure steps out in great style with his new transmitter. 3HR, 3PG, 3DV and 3CT are all heard but have nothing outstanding to report. 3DW is now located somewhere in Toronto. 3JL says everything is quiet in his neck of the woods. 3HP is the old reliable northern contact and traffic continues to slip through there like a well-oiled "timken".

Southern Dist.: 3UD has changed his QRA three times in five months. No wonder that callbook editors get curdled in the cupola. 3DH has been trying out different types of antennas to find the ideal one for both 20-and 40-meter use. He informs us that 3KP, 3MF, 3ZB and ex-3AQ have all joined forces and built a real xtal set to work on 20, 40 and 80. 3CJ has his set going up at Bobcaygeon and carried out some real traffic handling with 3DY at Toronto. 3DB with 20 watts input on his old 202 hooked eg-5BY and was R4 there for half an hour. 3DB, 3CJ, 3DY, 3CB and 3CZ are new ORS. 3CK is inactive but like 9CO will pep up with cooler weather. 3BL has built up and wrecked the transmitter so often he is getting dizzy. Old 3AT has been assigned the new call, 3GN, and is stepping out with a small current feed Hertz. 3FC has been having a great tussle with his new SW2 short wave Mullard to make it perk on 20.

Traffic: 3CJ 18, 9AL 15, 3DY 15, 3DB 10, 3FC 5, 3JL 2.

QUEBEC DIVISION

QUEBEC—SCM, Alex Reid, 2BE—Interest this month is centered around the numerous expeditions going to the Arctic. Listen in any evening in the band from 32 to 37 and you will hear VYG, VOQ, VDE and WNP. They may need assistance so be on the watch. 2AL, 2CG, 2BG and 2BE are doing wonderful work on 20 meters. 2EV has just completed a beautiful portable short-wave transmitter and receiver for the Mission Fathers. This equipment was taken North by Bishop Turquetil who sailed on the SS Nascopie on July 14. 2CG left last week for N.B. on his vacation, taking a portable set along. 2BG had a visit from Capt. Fuller. nu-4NH called on 2BE while on his way to Europe. 2AX and 2HT are on vacations. 2CW has moved to a new QRA and reports conditions good. 2BM has a new antenna and new 216-B tubes.

Traffic: 2AL 15, 2BG 10, 2BB 11, 2CW 3, 2BE 13.

VANALTA DIVISION

ALBERTA—SCM, A. H. Asmussen, 4GT—The gang has been very slow in reporting the past two months, only a few reporting this month. The SCM notified the gang of his new QRA. For future reference, see page 3. 4CL is doing some nice DX and has a sked with an Aussie and has no trouble putting it over sending single. 4DG has been burning up a lot of tubes lately but manages to keep the air. 4HM has been away for several weeks and is again leaving for the East, he may come back with a couple of quart bottles and some new ideas. 4CU has loaned some of his junk to a BCL station—here's hoping he gets it back soon (and in good condition). 4GT hopes to be on the air again very soon. A letter is being mailed to all stations in this section asking for cooperation in getting the reports in each month, also about splitting this section in half and putting on a contest to get new members for the A.R.R.L. The SCM would appreciate a letter from all interested.

Traffic: 4DG 8, 4HA 4.

BRITISH COLUMBIA—SCM, E. S. Brooks, 5BJ—5AV appears to be the first station in this district to connect with CKA (Baymaud). 5GO reports working all OA districts in one night and two OZs. 5BJ has changed his xmitter to self rectified. 5AU received a QSL from England reporting his 20-meter sigs R4. 5CJ is a new one—please QSO him, gang. 5CO is trying to break the record of blowing 2-mike condensers. 5CE keeps a sked with 5GT. 5AR works the east coast on 20 in daylight. 5AJ kept a sked with xnc-2BN until they arrived at New Zealand. 5BK reports working the U.S. West Coast on 20 meters.

Traffic: 5CE 52, 5AJ 35, 5GO 34, 5AV 23, 5CO 16.

PRAIRIE DIVISION

SASKATCHEWAN—SCM, W. J. Pickering, 4FC—Well, fellows, your June-July report was much better—nearly everyone reported but summer weather sure killed traffic. 4AA is too busy to be on the air. 4AO is Govt. Radio Supervisor for the Province now and has moved to Regina where he will be on the air again soon. 4AQ got R7 from BEM at Bermuda. 4BF is on the air in Saskatoon with a 5 watter and doing fine. 4CB is back from his holidays. 4CP is still going good. 4FA and 4FC report nothing doing at their shacks. 4FN has 250 watter but can't kick out and is thinking of moving his location. 4FO of Winnipeg has a set perking on M.J. and worked both coasts.

Traffic: 4AQ 1, 4CP 4.

Calls Heard

ac-8HB, H. B. Wilson, c/o Box 266, Shanghai, China
(During March, April and May)

6akw 6awc 6ad 6axs 6amm 6bxc 6bvy 6bb 6bzn 6bg 6bd 6bux 6cco 6che 6ctx 6cbd 6cmq 6ch 6cww 6dic 6dcq 6dfe 6fg 6fr 6hm 6jn 6ju 6js 6py 6rn 6rw 6sm 6ta 6zi 7of 7tm 7rl 7bd 7rh 7mo 7df sb-1ac sb-1aw sb-2af sb-2ag sb-2as su-2ak sc-2bg sc-2ar sa-cb8 oa-2no oa-2bv oa-2wj oa-2tm oa-2sh oa-2mh oa-2rc oa-2hm oa-3bw oa-3am oa-3es oa-3my oa-4rb oa-5hy oa-5jh oa-5ja on-6gm oa-7cs oh-6cxy oh-6akp oz-1fe oz-1af oz-1ax oz-2bx oz-3au od-pk1 oo-bam op-1rc op-1dl op-1hr op-1ab op-1au op-1ah op-2ac op-4aa op-xc3 op-wucc ac-8flo ac-8oc ac-8pm ac-8gg ac-xl1 ac-1xk ac-1rcc ac-1crs ac-1al ac-2aw ac-2pa ac-x2nr ac-vps ac-p9ab af-8tc ae-1bk aj-3st aj-3cm aj-lab aj-1sm aj-1sk aj-jkxb ai-2kt am-vs1ab am-vs2ac am-vs3ab as-rao3 ef-x8rdo ef-8cl ef-8jf es-2nm es-2co ek-4uu ek-4dba eh-9oc ei-1ay ep-x1ma fo-a9a fo-3sr fo-a5o vlb jos agb pkx kio ffjp vnb hva pkp 2bk 1xkd cjh ffjq olq cjs 5va ohc.

eg-2BZT, Stourton Hall, Horncastle, Limes, England
(Heard on 20 meters from May 22 to 23)

1aw 1aj 1uw 1rf 2ch 8aly 1py 8avd 8dg 8ahc 2ahm 1adm 2nm 1ch 1sw 1aff 4rr 1amu 2xad ei-1bd ei-1cr sb-1aw sb-1aj sc-2ar sc-2bl sc-2ah sc-2ag nc-1ap nidk.

eg-2IT, Bertie Walsh, Clovelly, Armagh, Northern Ireland
(20 meters)

1aba 1adm 1aff 1ahi 1ajm 1akz 1axa 1ayc 1bhm 1byv 1caw 1cmf 1cpb 1csx 1df 1xm 1rw 1ry 1sw 1uw 1vc 1zl 1zz 2ahm 2aol 2agn 2baa 2bbe 2cvj 2gp 2ox 2tp 2we 3akw 3btq 3qv 3tn 4jp 4rr 5acl 6df 6kb 6zat 8adg 8ahc 8ahd 8aly 8avd 8ayo 8ecs 8clp 8dgx 8dp 8gx 9ark 9arn 9bmx 9cki 9vo nc-1ac nc-1ap nc-1ar nc-1br nc-1by nc-3cs nc-3mp nc-9bz sb-1ad sb-1ak sb-1aw af-1b vs-1ab np-4sa.

BRS26, Adolphus S. Williamson, 106 Rushdale Rd., Meersbrook, Sheffield, England
(20 meters)

1ahi 1akz 1bhs 1bkv 1cpb 1adm 1asu 1byx 1ccz 1aaq 1aep 1cmx 1aff 1byv 1aur 1bct 1bux 1bbm 1cmf 1beb 1cax 1ach 1ajm 1bcn 1awe 1adg 1cch 1bvx 1ads 1aqt 1ahc 1bfx 1bsm 1bhm 1aau 1py 1dl 1vo 1zl 1df 1cp 1io 1vn 1nv 1on 1zz 1mv 1da 2ox 2hb 2sy 2gq 2or 2xr 2gp 2bg 2tp 2xt 2jn 2nm 2ch 2wc 2cxl 2ahm 2aol 2xad 2cmf 2akb 2bsc 2amb 2btq 2aom 2agt 2aun 2cvj 2cuz 2bgg 2arr 2agn 2alp 3btq 3bwj 3bgg 3tn 3co 3ak 3hs 4nh 4jm 4tu 4dv 4qy 5mx 5wr 6vz 6ix 6azs 6lut 6zat 6bxi 6agr 6amr 6bjh 6bux 7ek 8iz 8zx 8aj 8dhx 8dbb 8atv 8don 8asb 8adg 8ahc 8aly 8afq 8dgk 8ayo 8box 8byt 8avd 8dem 8drj 8acz 8avl 9bht 9bdq 9ara 9bmw 9eag 9cei 9db wtt kfhb nc-1ap nc-1co nc-1br nc-1ar nc-1by nc-1aw nc-1dm nc-8ar nj-2pz np-4sa af-1b vs-1ab fm-8mc fm-8ip fm-hun2 sb-1ad sb-1aw sb-1ac sb-1br sb-1ib sb-2aa sb-2ab sb-2ar sc-2ar sc-2ah sc-2as sc-3ag gisk ocdb pqs.

BRS65, H. W. Rutledge, 59 Montholme Rd., London, S. W. 11, England
(Heard from June 19 to 25 on 20 meters)

1adm 1aef 1aep 1aff 1ahg 1aiq 1ajm 1akz 1aqt 1aun 1axx 1ayg 1azs 1bbr 1beb 1bux 1byv 1byx 1cax 1cmf 1cpb 1cra 1da 1nf 1nv 1py 1ry 1vw 1zs 2ahm 2aol 2avb 2awx 2baa 2cux 2jc 2nm 2tp 3wc 5ie 8aly 8ayo 8dbc 8jf 8ve 8zz 9cei 9db nc-1ap nc-1br nc-1co nc-2bg sb-1ac sb-1ad.

Miss B. Dunn, Stock, Essex, England
(Heard during June on 20 meters)

1ach 1aid 1aur 1cmx 1ex 1fn 1nv 1sw 1xf 1xv 1zz 2bal 2ch 2jn 2tp 2xad 2xr 3ahl 3btq 3cec 4jr 4tu 8adm 8aj 8aje 8ajr 8aly 8aro 8dgk 8dgx 9cn fm-tun2 sb-1ac sb-1ad sb-1br fz-spw ghi nuw.

(30 to 50 meters)

1azd 1mv 1xv 2adl 2agn 2akv 2ase 2ayj 2ax 2bck 2biq 2uo 2xaf 3afu 3afv 3ahl 3cen 3mv 3qe 4lk 8jq nc-1dq ni-tfhv ni-1nic nj-2pz nr-cto nr-2fg ep-1ae ep-1ag er-5aa ardi nulv oc8.

ef-RO91, C. Conte, 24 Albe u Rocher, Clichy-sous-Bois (S-et-O) France

1aef 1aff 1aga 1ags 1akm 1alr 1anx 1apu 1arc 1asi 1asu 1atr 1atv 1aur 1avl 1avy 1awm 1bck 1bcn 1bed 1bhs 1bms 1bux 1br 1byv 1ccz 1cmf cmx cnx 1ed 1eo 1lx 1mo 1mr 1mp 1ry 1rw 1sw 1ux 1vc 1vw 1xf 1xv 1zd 2aas 2abf 2abp 2aby 2alb 2aeb 2agp 2ahb 2ahm 2alj 2ang 2ann 2anx 2apo 2atk 2ats 2atx 2avb 2awq 2ayg 2bbc 2bcv 2bdj 2biq 2bsc 2bur 2cep 2cjd 2cjx 2crb 2cs 2cuq 2cw 2cwm 2afs 2gx 2je 2kx 2lh 2mb 2md 2nm 2px 2qp 2rd 2tp 2ub 2vd 2wr 3acv 3aed 3aef 3afw 3ajc 3aip 3aul 3ag 3bco 3bhv 3bwj 3cab 3ceb 3cbt 3car 3cbl 3ch 3dd 3ec 3gp 3lw 3mv 3ow 3qe 3qw 3sg 3sh 3ss 3ta 3tf 3tu 3tn 3xan 3wf 3wj 3cec 4ad 4af 4ai 4ay 4cj 4ci 4dd 4dv 4dx 4fw 4hx 4jd 4li 4ns 4ok 4oy 4pf 4qb 4rn 4tk 4wc 5aqf 5di 5ql 5st 5wo 8aad 8acz 8adg 8air 8ajp 8alg 8aly 8atv 8auc 8axn 8bad 8baq 8bau 8bbk 8bbn 8bcc 8ben 8bjb 8bmc 8bno 8bpl 8bsc 8bsu 8bth 8bwa 8bog 8ccs 8cng 8cwt 8dbc 8dsg 8jr 8ru 8uk 8vw 9apy 9baz 9dah 9dpj 9eev 9ek 9ele nc-1ap nc-2bb nc-2al nc-1ar np-4sa np-4jg.

eb-4AC, 16 Kerkstraat, Antwerp, Belgium
(Heard during June)

1mv 1sz 1bhw 1alr 2bxu 2pp 3bco 4iz np-4jg nr-cto nj-2pz nr-2fg sa-cb8 sa-de3 su-1oa su-2ak sb-1ar sb-1ax sb-1aw sb-1ck sb-1ib sb-2ag sb-2as sc-2ar sc-2as sc-2ah oa-7cw oa-7cs oa-7hl oa-2yi oa-2gw oa-2jw oa-3bq oa-5bg oz-4aa oz-2ae oz-3ar oz-3aj oz-2bg oz-2xa oz-2br oz-4av.

eb-4UU, 312 rue Royale, Brussels, Belgium
(20 meters)

1aff 1bbm 1ajm 1byv 1cmx 1zz 1sw 1amu 1rw 1adm 1asu 1cab 1axa 1bux 1py 1ia 1acp 1ry 1ap 2aly 2ahm 2acp 3sj 3sk 3hg 4io 8afq 8dod 8dbe 8dea 9bux 9bzi nc-2bg np-4sa su-2ak sb-1ab sb-1aw sb-1ac sc-2ah sc-2ar af-1b.

(32 meters)

sb-1ib sb-2ar sb-1ax sc-2as.

ei-1CR, Ing. Vincenzo Quasimodo, Gorizia, Italy
(20 meters)

1aff 1cmf 1hn 1df 1bcn 1bhs 1acp 1io 1big 1ala 1cab 1cz 1aga 1ic 1axa 1cjh 1by 1bux 1ga 1amu 1cpb 1adm 1py 1aur 1zl 1ch 1ry 1byv 1sw 1rf 1caw 1cmx 1vw 1awm 1fn 1byu 1acp 1awe 1bcz 1mv 1bcn 2bg 2bsc 2ahm 2lz 2evj 2tp 2jn 2apl 2px 2tr 2des 2ckj 2gx 2amj 2wc 2awq 2byx 2nm 2cuz 3cgc 3hg 3bqt 3tn 3cec 3akw 3jc 3aed 3agc 4jp 4qq 4tu 4ef 4io 4xe 4px 5by 5bf 5ux 6zat 6agr 6bux 8ben 8aly 8bdp 8nn 8dgx 8adg 8ahc 8drj 8csn 8avl 8ces 8bb 8ayo 8box 8ahd 8ail 8axd 8nt 8dem 8ve 8btr 8cil 8dhx 9deq 9en 9ef 9des 9bpm 9dws 9dij 9erd 9bwo 9dai 9bzi 9bbh 9adn 9bay 9db 9ark 9cvy af-1b nc-1ac nc-1bi nc-2be nc-3gg nc-3jm np-4sa nr-cto fo-a4f fo-a5x sa-fc6 sb-1ac sb-1ad sb-1ak sb-1aw sb-1br sc-2ar sc-2ah oz-4bd.

(40 meters)

1dl 1ckp 1aci 1aur 1on 1sz 1lj 1lu 1bhm 1bdi 1bhw 1ss 1cnp 1yb 1bad 1lg 1alr 1ch 1dm 1cjc 1av 1lx 1auc 1cmx 1xam 1ajx 1ka 1dee 1arc 1mv 1kp 1asa 1ap 1cre 1cts 1km 1rp 1ql 1id 1rf 1cdx 1cue 1beg 1nd 1axa 1axx 1clv 1bfx 1bux 1li 1afu 1afn 1bkk 1df 1akz 1ia 1aba 1om 1amu 1bgw 1bjk 1uw 1ak 1awx 1bkv

(Continued on Page 87)

Correspondence

The Publishers of QST assume no responsibility for statements made herein by correspondents

About Licenses

Department of Commerce
Radio Division
Washington

Mr. K. B. Warner, Sec'y-Editor,
The American Radio Relay League,
Hartford, Connecticut

My dear Mr. Warner:

I have your inquiry of the 18th instant concerning the status of amateur station licenses when the holder changes his address and that of his station from the address specified in his existing license.

As all radio station licenses with the exception of portable station licenses authorize the operation of a station at one certain point as indicated on the license, it is obvious that the operation of that station at any other locality is equivalent to the operation of an unlicensed station.

Accordingly, when an amateur moves his station from an address at which he is licensed to operate it, to a new address for which he holds no license, it is necessary that he return his existing license to the Supervisor of Radio in charge of the district in which he is located, for cancellation, and at the same time submit application forms for a new station license.

Respectfully yours,
—W. D. Terrell,
Chief, Radio Division.

More Reasons for Phone

1718 South 14th Street,
Lincoln, Nebr.

Editor, *QST:*

QST has always been good but is getting better. Judging from a letter printed in the June issue, it seems as if the phone problem is now about to be opened up for discussion. That looks like a good policy to me.

Speaking in a broad sense, we are all in the game solely for the pleasure we get out of it,—either directly or indirectly. The only excuses we have for our activities are the training of operators and the development of the art. (Either one would be sufficient justification.) I am trying to get back a distance and get a bird's-eye view of the subject and that's the way it seems to me, at least.

I get pleasure out of amateur radio in more ways than one but the fact is, I get more enjoyment out of developing, or at least trying to help develop radio, than I do out of operating.

We amateurs of all countries have been doing some fine work in this direction during the past few years. In one way it seems as if we have now earned a breathing spell and should take it easy for a while and brush up on our operating. This may be true but I doubt it. I think short-wave radio telephony is now about due for development. It is true that many old timers, and new comers as well, look askance of the phone enthusiast and do so with some reason, too. Some of the phone hams cause plenty of trouble and they are generally known as a group who cannot use code properly and do not care to learn. I admit that is true in many cases but at the same time, it most certainly does not apply to all. In fact, I can make a fair-sized list of very good code men who are enthusiastic about s/w phone possibilities. Yes sir! I can even find a few of them in the B. P. L. Knowing the attitude of the majority of the bunch, they do not say much, of course.

Owing to bad power QRM here on the upper band, most of my phone experience and observation has been in the 85-meter region. I had an 85-meter phone going within a few days after that band was opened up for phone. Results were immediate and surprising. I kept very closely in touch with 85-meter phones for a year. There have been many disappointing failures; conversely, also, some gratifying successes. I am sorry to say that the reasons for success or failure usually remained unexplained. Therefore, we have not learned much.

During the period when the radio laws became inoperative, some of the more adventurous (perhaps foolish or inconsiderate would be a better word) tried out their phones on 40 and 20 meters. Taken as a whole, the 40-meter phones heard here were distinctly *better* than the bunch on 80. This held true even in several cases where the same station used phone on both 40 and 80 meters. This may sound queer and I don't try to explain it. Nevertheless, it is true to the best of my judgment. As to 20-meter phone, reports of R6 and R7 and very clear, were not hard to get over distances of 1300 miles with an input of 60 watts. Results seemed very erratic though. The point that I am trying to make is that

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It's new, and your dealer may not have it in stock, but he will gladly order it for you, or we will send direct.

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Dept. Q—9 So. Clinton Street, Chicago

the possibilities of s/w phone are wonderful but have not been touched.

True, the phone has some objectionable features. The chief of these is, perhaps, the QRM they cause others, both DX and local. I have seen pages and pages on key thump filters but never a word on phone QRM prevention; the phone man has had very little help and plenty of discouragement. I believe that this is a phase of radio that will require real skill to develop but that it will be done soon. Who will do it? I hope the American amateur will have an opportunity of doing his share.

I do not advocate the relinquishing of our phone privileges. On the contrary, I think they *should be extended.* We now have the upper edge of the 80-meter band. Speaking in terms of frequencies, this band extends from 3.50 to 4.00 magacycles and phone is permitted from 3.50 to 3.60 magacycles, or the lower one fifth. Why not ask the Radio Commission to open up the lower one fifth of each of the other bands also. That is, 7.00 to 7.20, 14.00 to 14.40 and 56.00 to 57.60 megacycles, for the so-called 40-, 20- and 5-meter bands respectively?

This may look like too much of a good thing to some. If so, a limitation as to days or perhaps hours would be in order. The development of a short-wave radiophone would be hampered less by being confined to certain times rather than being confined to certain wavebands as it now is.

When short-wave c.w. was first tried, a great deal of difficulty was experienced in obtaining a d.c. tone. Some one suggested the cause to be "audio frequency fading" and as a corollary it was at once evident that short-wave phone could never be used. The "audio frequency fading" theory seems now about to be thrown into the discard. At worst, it is not nearly as bad as was at first supposed. We have permitted the theory to be more of a hindrance than a help.

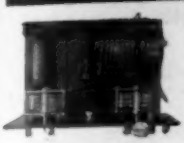
I do not think that short-wave telephony can ever compete with c.w. as far as super DX is concerned. However, I do think that reliable and satisfactory communication can be had over surprising distances with low-powered short-wave telephony.

The only thing we need is legal sanction plus a little time to get a better understanding of natural conditions which we now call "freakish", "erratic", "unusual", etcetera.

Oh yes, c.w. is used here about 95% of the time, I judge. At least, I have not used phone since March.

This letter has turned out to be a little longer than I had expected but I hope you will pass the idea, at least, along to the gang.

—Louis F. Leuck, 9ANZ.



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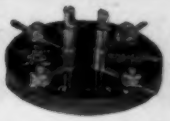
TRANSMITTING INDUCTANCES—

TUNED PLATE TUNED GRID



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Single units of type LL *A 3 Clips Supplied with Each Unit ..... **Price $11.00**

Special designs of flatwise or edgewise wound inductances for broadcasting stations. Prices on application.

Remember—the REL line is **complete**—it includes everything used for Short Wave receiving and transmitting.

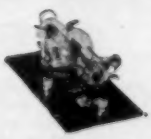
Inductances, sockets for all type tubes, wavemeters for all uses, T. P. T. G., Hartley M. O. P. A. and Beginner's Transmitting Kits, tuned R. F. chokes and receiving coils—all are pictured in the REL catalogue together with many adaptable circuits and a stack of information that will come in mighty handy. The catalogue will be mailed to you on receipt of Twenty Five Cents cash or M. O.

REL owns and operates experimental Station NU2XV on 15.1, 30.2, and 60.4 meters

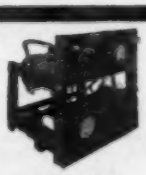
Radio Engineering Laboratories

REL **100 Wilbur Avenue, Long Island City, N. Y.** REL

REL CHOKE COIL

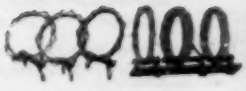


DE FOREST "H" TUBE HOLDER



50 WATT COUPLED HARTLEY

UX-852 TUBE HOLDER



SPECIAL SHORT WAVE COIL KIT

"B" Eliminator TESTING Problem Solved by Sterling

TO GET full value from your "B" Eliminator you must *know* that your "B" Power is delivering the *right* amount of voltage to detector, amplifier and power tube.

Low resistance voltmeters suitable for testing batteries are worthless for testing "B" Eliminators. This specially designed High Resistance Sterling is accurate for both.

Whether this voltmeter is used in your business or for your own set, it is *essential* if you want the facts about any "B" Eliminator.

It is the Universal Voltmeter for the Amateur

R-415

Sterling voltmeter meets the special needs of the amateur in a variety of ways—for testing the output of D. C. Generators, and for every other purpose calling for a *high resistance* voltmeter.

Never before has a laboratory instrument been available at a price so reasonable.

Sterling

R-415 VOLTMETER

A laboratory meter at the remarkably low price of **$8.50**

Also Model R-417. A New 150v. Sterling A. C. Meter for Testing A. C. line current and all A. C. Circuits $7.50

THE STERLING MFG. CO.
2831 Prospect Ave. Cleveland, O.

Favoring Phone

Osceola, Mo.

Editor, *QST:*

I would like to break into print in your "Correspondence" columns in defense of the "phone hounds".

We are operating on 170 to 180 meters with phones and there are a number of c.w. stations in the same band. I believe this to be perfectly o.k., if they wish to operate there. Also we have a very narrow band on the upper end of the 80-meter band which is not used much except in Summer and for daytime communication. However, it looks as though we are going to develop quite a number of fairly good 80-meter phones and from my experience, there is no doubt but that the 80-meter phone will perform better than the 180-meter ones for low power and long distances.

3AGG gives me a better report on volume on 80 meters with 1 ampere of antenna current than he does on the 180-meter band with 3.5 amperes antenna current.[1] Modulation is the same on both bands. I get the same reports from a listener in Baltimore, Md.

I have handled and relayed 86 messages to all parts of the U.S.A. since November, 1926. 83 of these were handled only by phone stations and all reached their destinations correctly. The other three were given to an 80-meter worker for North Dakota and Montana where phones are scarce. All three were lost entirely, even though I had a repeat back and an o.k. on them all from the station to which they were given.

I don't quite agree with the two brothers in the eighth district who think that we phone men should either be segregated or sent to some warmer climate. We hear plenty of c.w. workers in the 170- to 180-meter band and we never make any caustic remarks about them. We just shift our wave a little and go right on. I think, or want to think, that the opinion voiced on page 68 of the June issue does not have a majority following. I think we need the 80-meter phones for daylight and distance and that we should also have a phone band in the neighborhood of 25 meters.

The phone men have developed these transmitters by a spirit of coöperation, by helping each other. I think it is any amateur's duty when he hears a station which is not good, to try and help him do better instead of treating him coldly.

Let's hear from you "phone hounds" before it's too late.

—*E. E. McKinney, 9AWE.*

1. The antenna current may be very misleading. A more accurate method would be to measure the radiation resistance of the antennas and from this calculate the watts radiated. Even this would by no means tell the whole story as there are such things as the angle of radiation, etcetera, to be considered.—Assist. Tech. Ed.

Dubilier

The Pioneer

A history of the Dubilier organization takes us back to the very conception of wireless telegraphy. Then, practically every Dubilier device was a "special order" built for experimenters whose names are now famous. Today, these same electrical and radio engineers turn instinctively to Dubilier for either standard articles of manufacture or laboratory models for their research. This keeping step with the industry has given Dubilier a merited reputation for condensers which are way above the average in ruggedness, safety factor and long life.

DUBILIER CONDENSER CORPORATION

4377 Bronx Boulevard, New York

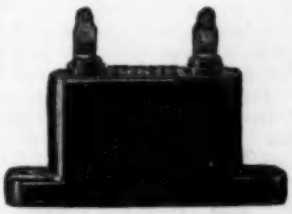
Dubilier
Light Socket Aerial

List Price
$1.50

Present-day broadcasting and modern receivers don't require outdoor aerials. A Dubilier Light Socket Aerial and a few feet of cord will give you a highly efficient antenna and do away with lead-in wires, insulators, faulty connections and lightning arresters. The device consumes absolutely no current and needs no attention whatever. Works on any cycle, A. C. or D. C. Sold on a five day money-back basis.

Dubilier Condenser Blocks

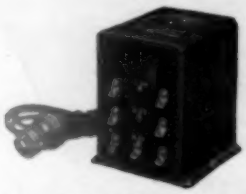
Dubilier condenser blocks for Raytheon and other leading circuits are rugged in construction, and have the unusually high factor of safety of better than five to one — insuring the longest condenser life obtainable.



Dubilier Micadon

Here's the famous Dubilier ***Micadon*** in its modern shape and new case of rich Bakelite. Compact, handsome and efficient. Terminals adapted to screwed or soldered connections.

Prices 40c to $1.50



For Use With the New A. C. Tubes

This fall the new A. C. Tubes will come into general use. New sets will be built using them and old sets rebuilt to accommodate them. A small transformer is needed to operate the tube, and here it is.

NATIONAL

A. C. Filament Transformer

for 110-115 volts, 60 cycle A. C.,—three secondaries give 1.5 volts, 2.5 volts and 5.5 volts.

Price $10.00

NATIONAL CO., Inc., Malden, Mass.
W. A. READY, President

Did You Say POWER?

That's the middle name of this big Power Clarostat of ours. It handles 40 watts, without flinching—and it won't pack, fry or create an uproar of its own. It's as silent as the mid-winter night. And it stays put. No use trying to tell you how to use the Power Clarostat. It's standard equipment for the latest A-B-C power jobs. It's just the thing for controlling series-connected filaments. But there are lots of ham applications for transmitter, rectifier and receiver, with various resistance ranges to meet all requirements, and where real power must be handled without alibis. And all for $3.50. ***But beware of poor imitations. Look for the name stamped on the shell.***

See the Power Clarostat and its brother Clarostats at your radio dealer. Ask him for literature or write us direct.

American Mechanical Laboratories, Inc.
Specialists in Variable Resistors
285 North 6th St. Brooklyn, N. Y.

CLAROSTAT

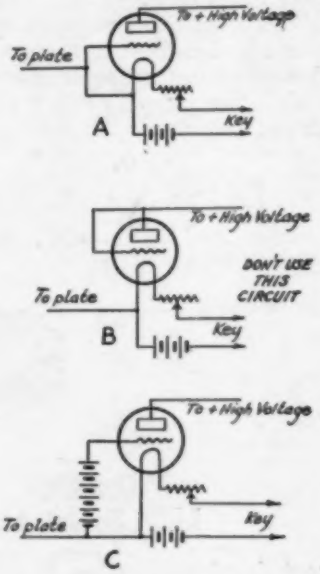
Clickless Keying

Red Lodge, Montana.

Editor, *QST:*

The accompanying circuit diagrams show a vacuum tube relay that worked excellently on my low powered transmitter. No clicks whatever are to be heard even on my own receiver located but a few feet from the transmitter.

In the circuit, "A", using two 201-A tubes in parallel, I can pass 65 mils to the set. I thought that by running a jumper to the grid as in "B", I would increase the plate



current but this is not so when using 201-As. It completely destroys the emission and you simply get a hugh surge for a minute and then it is all over.

The circuit "C" is the best, I found, with my limited apparatus. Using this arrangement with a 45-volt B battery connected as shown, I can pass nearly 100 mils, using two 201-As in parallel. The drain on the B battery in this case was 8 mils.

I feel quite sure that this idea could be carried out on a much larger scale using power tubes as the relay. With this arrangement, there is no need for a keying filter at all. Simply hook it up and forget the thing. I might advise that tubes with filaments which light quickly must be used or else your signals will drag out. Changing the polarity of the A battery seems to have little effect on the thing but the B battery must be connected as shown. It is just the reverse of the usual C battery.

I am not telling you that I have discovered something or that the job is entirely done but I do want to say that if some of these fellows with laboratories and materials to work with would take this

All Direct From A. C. House Lighting Circuit

"A" "B" AND "C" CURRENTS

THIS new Stromberg-Carlson Receiver is entirely operated from 50 60 cycle, 105-125 volt house lighting circuit, by means of an Audio-Power unit concealed in the cabinet. This unit furnishes "A", "B" and "C" power in unfailing supply and is not dependent upon frequent operating attention. Batteries and liquids are all done away with.

Designed especially for use with the Stromberg-Carlson No. 10 Cone Speaker. A new seamless Cone Speaker built with thin apex and thicker edge for even sound-producing qualities. Reproducing below 60-cycle fundamental tones, this Speaker is designed especially for 1928 A. C. Stromberg-Carlsons, for, on account of its wide musical range, it can be used only with the highest grade Receivers.

[No. 524 Receiver, Console Model, American Walnut Cabinet / Also furnished in table model; Mahogany Cabinet]

No. 524 Stromberg-Carlson A. C. Receiver—Art Console

Uses outside antenna, external cone speaker. Has dual control; Weston voltmeter, Totally shielded coils; Phonograph jack which permits using the Receiver for reproducting from records in connection with a standard phonograph when the latter is equipped with magnetic pick-up device in place of customary soundbox.

Includes Stromberg-Carlson No 403 Audio-Power Unit with the following eight R. C. A. Tubes

- 3 UX 201-A Amplifier Tubes
- 1 UX-200-A Detector Tube
- 1 UX-171 Power Tube (Last Audio Stage)
- 1 UX-280 Rectifier Tube
- 2 Tunger 277465 Bulbs (2 amp.)

PRICE, *including all tubes and No. 403 Audio-Power Unit—*

EAST OF ROCKIES . $425
ROCKIES AND WEST $455
(Cone Speaker extra)

STROMBERG-CARLSON TELEPHONE MFG. CO.
ROCHESTER, NEW YORK

Stromberg-Carlson

Makers of voice transmission and voice reception apparatus for more than thirty years.

Send the EASY Way

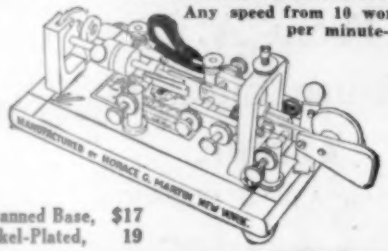
With The Improved Martin

Reg. Trade Marks
Vibroplex
Bug
Lightning Bug

VIBROPLEX

For Continental or Morse Code

Any speed from 10 words per minute-up



Japanned Base, $17
Nickel-Plated, 19

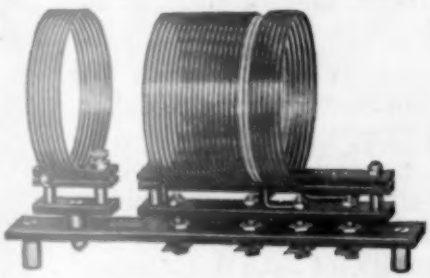
Easy to learn and easy to operate. Simply press the lever—the Vibroplex **does the rest.** Adjustable to any speed from 10 words per minute up. Saves the arm, prevents cramp and improves sending 50 to 100%. Over 100,000 users. No station complete without this up-to-date **BUG.** Can be used in majority of DX circuits without relay.

Special Radio Model

Equipped with Extra **Heavy,** Specially Constructed Contact Points to break high current without use of relay. Sent anywhere on receipt of price. Money order or registered mail. **$25**
Liberal allowance on old Vibroplex.

Insist on the Genuine Improved Martin Vibroplex. The Vibroplex Nameplate is YOUR protection. **Order NOW!**

THE VIBROPLEX CO., Inc.
825 BROADWAY NEW YORK
Cable Address: "VIBROPLEX" New York



The NEW CHI-RAD Short Wave Coils

20—40—80 Meter Band

Designed by Chi-Rad engineers to meet the demands for an extremely efficient short wave coil. Complete with mounting, hardware and three interchangable plug-in coils to cover 20, 40 and 80 meter wave bands. These coils are noteworthy for their convenience in design, neatness in appearance and sturdiness in construction. All plugs give positive contact.

Chi-Rad Short Wave Coils Complete for 20, 40 and 80 meter band **$10.00**
Extra coil for broadcast band ..... **$ 4.00**

Dealers and Set-builders—write for further details and discounts.

Chicago Radio Apparatus Co.
415 South Dearborn St. **Chicago, Ill.**

thing and try it, then improve it, we would have a great deal less clicks in this radio world of ours.

Hoping you won't laugh this off, I am,

—*M. W. Buening, 7AFP.*

Forwarding Cards

Oakdale, La.

Editor, *QST:*

I have been an interested reader of the "Correspondence Department" for a couple of years and have sided with this or that side of every debate. I should like to say a few words about the matter of QSL cards.

I find that many foreigners who work seven or eight "nu" stations each night, send their QSL cards in a packet to one station with the request that they be forwarded to the others. Now, either through neglect or carelessness, these amateurs fail to respond and some of us are out a much-prized DX card.

I have QSO'd some foreign stations from whom I have never received a card and I have finally attributed it to this, after having seen the thing done. Please, fellows, have a heart and pass such cards along to their destinations.

—*John Williams, 5IE.*

QSR

279 Molino Avenue
Long Beach, Calif.

Editor, *QST:*

The other night, 6AM gave a "CQ East". An Eastern station answered whereupon 6AM sent a message. When the message was all sent, the eastern station said that he couldn't find a pencil and paper, so the entire message was repeated once more.

It seems logical that those who operate amateur radio stations should have a pencil and paper handy at all times, as we undoubtedly waste many valuable hours of operating time hunting up these materials.

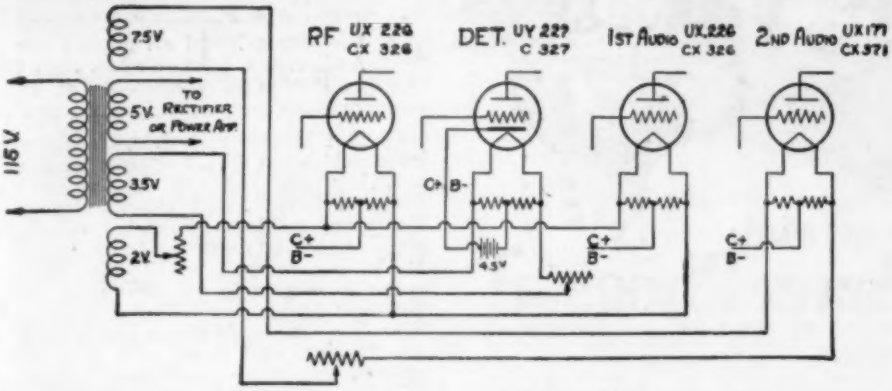
On the other hand, 6AM has in many cases told the other station to go ahead and the station would not start until he got an answer to his "QRV?". In each of these cases, from three to ten minutes have been wasted because the other station would not believe that when 6AM says, "go ahead" (k), he means it. I think the same holds true of a great many others, and it should be a part of our plan in operating stations, to always have a pencil and paper ready and thus save a lot of unnecessary signals when starting messages.

This is in direct contrast to the numerous statements recently appearing in these columns to the effect that a station should always get a QRV before sending a message. Usually a message can be sent a good deal quicker when in answer to a QRV?

Sincerely yours,

—*Don C. Wallace.*

Complete A. C. Operation



For the past several seasons the trend has been toward complete battery elimination. Many satisfactory plate supply units operating from A. C. have been developed but filament operation from an A. C. source has presented more of a problem due to the larger currents required and increased expense in the rectifier and filter circuits.

The newly announced A. C. tubes offer an excellent solution to this problem. The above diagram shows how to adapt the filament wiring of the popular type of receiver to A. C. operation by use of General Radio parts especially designed for this purpose.

TYPE 440-A TRANSFORMER

The alternating current tubes require a source of low voltage capable of delivering large current. The various types of tubes require several different voltages. The Type 440-A Transformer supplies voltages as follows:

Priv. 115 V (for lines 105-125 volts) 60 cycles.

Sec.	2 volts	8 amperes
	3.5 volts	2 amperes
	5 volts	2.5 amperes
	7.5 volts	2 amperes

Price $10.00

Type 440-A
Low Voltage Transformer
Price $10

TYPE 438 SOCKET

The new UY-227 or C-327 detector tube has a separate heating element and requires a socket designed to take the new five prong base.

Price ..... $ .50

Type 438
Sockets
Price $ .50

TYPE 349 SOCKET

The various types of A. C. amplifier tubes are designed with standard UX base having four prongs and require a type 349 socket.

Price ..... $ .50

Type 439
Center Tap Resistance
Price $ .60

TYPE 439 RESISTANCE

The new A. C. tubes require a resistance with center tap across the filament as shown in the diagram. The Type 439 Resistance is adaptable to any socket in which the new A. C. tubes may be used.

Price ..... $ .60

Type 410
Rheostat
Price $1.25

TYPE 410 RHEOSTAT

The new A. C. tubes require low resistance rheostats capable of carrying appreciably more current than those used with D. C. tubes.

Resistance	Current	Price
.5 ohm	3. 5 amperes	$1.25
1.5 ohm	2. 0 amperes	1.25

Your local dealer should have the necessary parts in stock. If he is unable to supply you with all the items required, we shall be glad to send them to you prepaid upon receipt of list price.

GENERAL RADIO CO., Cambridge, Mass.

Centralab
Power Rheostat

This new unit is a knock-out for warp-proof, heat-proof performance. Its construction permits continuous operation at temperatures of 482° F. and beyond. Resistance wire is wound on metal core, asbestos-insulated; core expands with wire, insuring smooth action. Narrow resistance strips give small resistance jumps per turn, further assurance of even regulation. Compact 2" diameter. Ohms—500, 250, 150, 50, 15, 6, 3, .2, .5—price $1.25. Can also be furnished as a potentiometer. At dealer's, or C. O. D. You need this new Power Rheostat. Send postal for new circuit literature.

CENTRAL RADIO LABORATORIES
20 Keefe Avenue Milwaukee, Wis.

Centralab

QUALITY DONGAN PRODUCTS

POWER TRANSFORMERS AND CHOKES
—Insist on Dongan

It's a 'power year.' Whatever type of A C or Rectifier Tube you select for power unit operation insist on Dongan Transformers and Chokes.

Write for full information on transformers for new A C Filament Tubes.

Power Transformer No. 3591

Used with 350-400 m. a. rectifier tubes, making a thoroughly satisfactory and practical A B C eliminator. Specify make of tube you will use.
$15 list

Choke No. 3584

Used together with a b o v e transformer and 350-400 m. a. rectifier tubes.
$15 list

If your dealer cannot supply you send check or money order to factory direct.

Dongan Electric Manufacturing Co.
2999-3001 Franklin St., Detroit, Mich.

TRANSFORMERS of MERIT for FIFTEEN YEARS

The Indiana State Central Division Convention

A REALLY fine convention. These were the words heard all around the Elks Auditorium, Fort Wayne, Ind., where the fourth annual convention of Indiana amateurs was held on July 22nd and 23rd.

Section Manager D. J. Angus brought a large delegation with him from Indianapolis and they took charge of the first day's program. 9CLO, F. R. Finehout, covered that important subject, Crystal Control, in a manner that left nothing to be desired. L. B. Wilcox as well as Director Darr also spoke convincingly on the same subject. Under "Amusement" the delegates were kept in a roar with stunts of all kinds, and the "Liars" and those with "Pet Peeves" showed they knew something besides radio. The first day closed with D. J. Angus, chief of the Amalgamated Society of Radio NUTZ, conducting an examination of a number desirous of becoming members to the delight of the onlookers.

The Saturday morning session was spent at the plant of the General Electric Co. under the guidance of Geo. Graue, 9BKJ, and every one was appreciative of the courtesies extended. Fred Schnell, former Traffic Manager and now with the Burgess Laboratories, gave every one a pleasant surprise by attending the convention and made the afternoon session most interesting by a very fine talk that covered choke coils and receiving and transmitting circuits. Through the courtesy of the owners and operating staff of broadcasting station WOWO, Treasurer Hebert of A.R.R.L. Headquarters was given an opportunity to address the general public on Amateur Radio, which address was also heard by the delegates at the convention hall.

An unusually good dinner was served at the banquet, and after the tables were cleared off those present listened to inspirational speeches by Director Darr, who acted as Toastmaster, F. H. Schnell, D. J. Angus and A. A. Hebert.

It is now a custom that the distribution of prizes for stunts, etc., takes place after the speeches and the committee in charge was most pleased to be able to award so many valuable prizes donated by radio manufacturers. We gladly extend all these manufacturers the sincere thanks of everybody for their generosity and all those who were so fortunate as to get a prize should write the donor a letter of thanks. Don't forget that, fellows.

With three cheers and a tiger, for L. B. Wilcox, Chairman of the convention and his assistants J. W. Pitcher and F. W. Fischer, the convention came to an end with everybody pleased that the Radio Traffic Association had done such a good job.

—*A. A. H.*

There can be no compromise---

Experts concerned with important applications of electrostatic condensers are content only with capacitors of proven dependability.

Faradon Capacitors have made good in exacting applications.

In high grade Radio Broadcasting and Receiving equipment where reliable performance is essential as well as in Marine Direction Finders and Train Control Systems where protection of life and property is paramount, Faradon units are doing their bit.

There are several hundred distinct Faradon units in regular production on which data is available upon mention of the required application. Faradon engineers are always ready to assist in effecting a solution of any special capacitor problem.

WIRELESS SPECIALTY APPARATUS COMPANY

Jamaica Plain, Boston, Mass., U.S.A.

Established 1907

Faradon

1136

for

power circuits

It has become standard practice to use Parvolt Wound Condensers in circuits which quickly break down ordinary by-pass or filter condensers.

You will find that the same characteristics of accuracy, high direct current resistance, and the ability to give continuous duty at full rated voltage, make them desirable in circuits where even a poor condenser might "get by."

THE ACME WIRE COMPANY

New Haven, Connecticut

PARVOLT

WOUND CONDENSERS

6131-4

SUMMER DX SPECIALS

Transmitting Inductances

R.E.L. 20-40 or 40-80 inductances with clips and rods complete **$8.95**

Aero transmitting inductances 20-40, 40-80 new type special **$9.65**

Arsco pancake inductances 20 meter, 40 & 80 meter sizes **$4.25**

No. 12 enamelled copper antenna wire 100 ft. ..... **$ .79**

Pyrex 7" insulators **$1.20**

Power Transformers

Thordarson combined plate and filament transformer * a few left **$6.25**

Above has plate winding of 850 volts and filament 7½ volts with mid-tap. Thordarson 100 watt plate transf. **$10.95.** 450 watt plate transf. **$16.45.** Thordarson 80 watt filament transf. $5.95—150 watt filament transf. **$7.95.** Acme 75 watt power transf. $13.25. Acme 200 watt power transf. **$18.25.**

Meters * Voltmeters * Milliammeters and Antenna Ammeters

Jewell 3" flush mounting milliammeters. Any scale reading desired **$6.00.** Jewell 3" flush mounting A.C. & D.C. voltmeters (up to 50 volts) **$6.00.** Jewell 3" flush mounting thermocouple antenna ammeters any scale reading **$9.75.** Weston model 301 milliammeters and D.C. voltmeters any scale reading $6.95. Weston model 301 thermo*couple antenna ammeters. Scale readings any size **$11.65.**

Variable Transmitting Condensers

Cardwell new type T-199 & T-183B special transmitting .00015 & .00035 $8.95. Cardwell type 147B .00045 **$8.95.** Cardwell .00025 164B trans. cond. **$5.95.** Hammarlund new type, brass plate .00045 mfd. **$8.95,** .00025 **$6.45.** General radio .00005, type 334V $3.25, G. R. .0001 type 334T **$3.65.** National 25 plate .0001 mfd. 6000 volt **$9.45.** National .0005 mfd. **$12.95.** National 23 plate .00025 mfd. **$8.65.** National .00015 special $4.75. Rebuilt Cardwell 23 plate .00022 mfd., 3000 volt transm. condensers $3.20.

Grid Leaks

New Ward Leonard 5000 ohm center-tapped for 250s large type $2.45. New Ward Leonard 5000 ohm center-tapped-for 5s and 50s $1.80. Crescent Lavite Transmitting Leak, 5000 ohm $2.20 (for 50s) $3.15. General electric heavy duty grid leak for 5s and 50s special **$1.45.**

Enormous stock on hand makes possible immediate mail order delivery all parts sold on a money back guarantee* your money back if you are not entirely satisfied. All parts brand new and guaranteed. No CODs.

A. HASS—RADIO "2MA"

"Your Brother Ham"

168 Washington Street, **New York City**

I. A. R. U. News

(Continued from Page 44)

cards to me (under cover) I will do my best to see that they reach their correct destinations. I am writing this privately, in no way officially, but am sure my fellow hams will agree to this.

"Today, I received two QSL cards both marked on the envelopes, "Radio Station ac2FF" and I fear sooner or later trouble will eventuate for us if this continues. Please bear with us if we find it necessary to juggle about with our call signs later. We have got into this game and we want to stay in it if possible."

—ac2FF

The accompanying photo shows the equipment at ac8GG at Shanghai. We are giving a few excerpts from a letter of his to nu6HM.

"All the French amateurs here are off the air. ac8AG is on a 9-month holiday in France. ac8EM has just left for the U.S.A. and ac8QW is at present in Manila. ac8FR is QRT. My own station is also QRT due to French Consulate orders as the Cantonese want all the air.

"My British friends, ac8SLV, 8HB, 8OC, (or 2OC), 1CRR and 1CRS, all located in the International Settlement are still going strong. ac4TO is a Japanese and acXL1 is a Chinese ham who works with me at the French Municipalite. 8FLO, 8BN, 8RS, 8XX, 8FJT and 8PF are French official stations and are no longer working with amateurs.

"If I restart short-wave work, I guess I will get down to 5 meters as the QRM

THE CHINESE DISTRICTS ARE INDICATED

in Shanghai from foreign warships on all waves from 15 to 45 meters is fierce. It's continuous day and night with all sorts of notes, regular jazz!

"My friends in Japan have written that all amateurs have suspended operations as

VITROHM Transmitting Grid Leaks and Rheostats now cover the entire line of transmitting tube circuits. ¶The prices on these amateur products are reduced materially. ¶Your dealer should stock Vitrohm Transmitting Products. ¶If you have difficulty in obtaining them, write us direct.

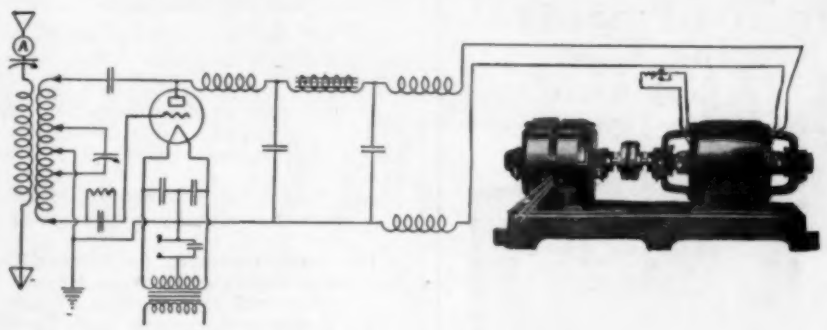
CATALOGUE NUMBER	PRODUCT	RESISTANCE	DISSIPATION	CURRENT	MAX. TUBE RATING	PRICE
507-2	Grid Leak*	5000 ohms	44 watts	90 m.a.	100 watts	$2.00
507-3	Grid Leak*	5000 ohms	200 watts	200 m.a.	1000 watts	2.80
507-4	Grid Leak†	50,000 ohms	200 watts	60 m.a.	1000 watts	6.50
507-5	Grid Leak†	20,000 ohms	200 watts	100 m.a.	1000 watts	4.25
507-51	Grid Leak*	10,000 ohms	200 watts	135 m.a.	1000 watts	4.00
507-66	Grid Leak**	15,000 ohms	200 watts	120 m.a.	1000 watts	6.00
507-63	Rheostat†*	50 ohms	50 watts	1 amp.		5.50
507-59	Rheostat*†	20 ohms	80 watts	2 amp.		5.50
507-83	Rheostat*†	12.5 ohms	60 watts	2.2 amp.		5.50

* Center-tapped
† DeForest P or R. C. A. 852 Tube
De Forest H Tube

** Steps at 5M—10M—15M for R. C. A. 852 or DeForest P Tube
†* For Primary Control
*† Filament and Primary Control

Ward Leonard Electric Company

37-41 South Street Mount Vernon, N. Y.



This is Item #26 used as a Plate Power Supply for a 204-A Tube.

Bulletin 237 lists over 300 other Generators, Motor-Generators and Dynamotors for Radio purpose. If you haven't your copy, write for it today!

ELECTRIC SPECIALTY COMPANY

Mark "ESCO" Trade

225 South Street **Stamford, Conn., U. S. A.**

Manufacturers of Motors, Generators, Motor-Generators Dynamotors and Rotary Converters, for Radio and Other Purposes

Oscillations Spoil Reception —*Stop Them!*

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(Reg. U. S. Pat Off.)
A True Balancing Device for Radio Frequency Amplifiers

Licensed by Rider Radio Corporation Pats. Pending — Patented 5-2-'16 Patented 7-27-'26

Thousands of radio fans are solving their problem of R. F. oscillation by installing Phasatrols.
This highly perfected instrument eliminates oscillations permanently—is very easy to install—and makes tuning for distance an easy matter.

Write for free hook-up circular for any set or circuit

Dept. 67A. 175 Varick Street, New York, N. Y.

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Note the wire fasteners. Unnecessary to mutilate copies. Opens and lies flat in any position.

A binder will keep your Q S Ts always together and protect them for future use. And it's a good-looking binder, too.

Q S T
1711 Park St., Hartford, Conn.

the government has issued instructions to all their amateurs that they must take out licenses or else be arrested."

We are showing herewith a map of China having nine districts laid out on it. It is expected that all the active stations will soon use calls the initial numbers of which will indicate the district in which the station is located. This should help in the routing of messages to the various parts of the country.

GREAT BRITAIN

Some months ago, we announced that there had been a change in the status of the Transmitter and Relay Section of the Radio Society of Great Britain. Previous to this "fusion", members of the T. & R. Section had no say whatever in the government and control of the Society unless they paid two subscriptions, one for corporate membership and the other for sectional membership.

Now, however, every member has a vote which he can use in all matters affecting the government of the Society or other matters as, for instance, the annual election of the Council, which is really a board of directors.

All applicants for membership holding a Post Office license for working a transmitter are accepted into the T. & R. Section (this will henceforth be known as the Transmitter and Research Section) automatically, but special application will be necessary on the part of those applicants not holding such a license.

The following is a brief summary of the terms under which the long expected "fusion" has been effected:—

1. All existing members of T. & R. to be admitted to corporate membership without payment of an entrance fee.

2. All new applicants for membership to be in accordance with the amended Articles of the Association of the Society, i.e.:—

(a) To pay an entrance fee of 10s. 6d. if he is not already a member of a section.
(b) Town members (resident within 25-mile radius of Charing Cross) to pay an annual subscription of 21s.
(c) Country members (members other than "b" or "d" below) to pay an annual subscription of 15s.
(d) Foreign members to pay an annual subscription of 12s. 6d. (All the above subscriptions embody a subscription of the T. & R. Bulletin.)

3. All town T. & R. members (see 2b) to pay forthwith the sum of 6s. this being the difference between their present subscription and that of an R.S.G.B. corporate member.

4. All R.S.G.B. corporate members already existing (all fully-paid members) to become subscribers to the Bulletin and an annual subscription of 5s. per member to be deducted from their annual membership subscription for this purpose.

A new instrument for a new need

—And now comes the A. C. Receiving Set—another household utility to draw its current from the light socket along with the electric iron and the toaster. But with all its simplicity and convenience you cannot escape the need for exact voltage regulation and adjustment of your set and tubes to the varying conditions of your city lighting circuit. Again Weston provides the necessary instrument for this new service. Inexpensive too,—considering Weston life-time quality and dependability. Every A. C. set requires this new Model 528.

It is made as double range Voltmeters and single range Ammeters and Milliammeters. If you have need for a miniature A. C. testing instrument you will be much interested in the unusual characteristics of this new model. Send for descriptive literature.

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Pioneers since 1888

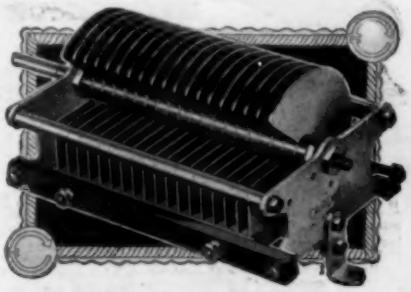
Cardwell

"Hot Dawg!

Fourteen answers to my CQ, and I used to have to call all night to raise anybody, before I put in Cardwell Transmitting Condensers."

Heavier plates—wider spacing—One for every tube and voltage. Get the condenser that fits your set, and you'll get more out of it.

Write for prices and specifications,



The Allen D. Cardwell Mfg. Corporation
81 Prospect Street Brooklyn, N. Y.

"THE STANDARD OF COMPARISON"

Have you seen the new Balkite "AB"?

It replaces both "A" and "B" batteries, and supplies radio current from the light socket. It contains no battery in any form. It operates only during reception. Ask your dealer. *Fansteel Products Co., Inc., North Chicago, Ill.*

Balkite
Radio Power Units

Magnaformer

Set Builders, be first — send NOW for the NEW Magnaformer 9-8 Hook-up. The Commander-in-Chief of 1928 Circuits. Now being featured in the Radio Magazines. The very last word in Receivers. Two years ahead of field in Design and Performance. Amazing tone quality. A fiend for distance. Double amplification each R. F. stage. A world of volume. No interference. Its equal has never been achieved. A beautiful looking job. **Easy to build.** Just the set to build for yourself or for others. Full size circuit blue prints and NOVEL wiring diagram, complete wiring instructions and detailed story of development and accomplishments of Magnaformer, the perfect Long Wave Transformer sent at once for 10 cents, SEND NOW. Be first.

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"Laboratory Product"

CRESCENT LAVITE RESISTANCES
for Distortionless Amplification

Transmitting Grid Leaks for five watt tubes $2.50. Dual Grid Leaks for one or two fifty watt tubes $3.50. Standard Resistances $1.50.
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WESTON Model 425 THERMO-GALVANOMETERS

Range 115 ma (4.5 ohms). These sensitive current indicating instruments are especially useful in wavemeter circuits and for measurement of high frequency resistances. Brand new in original cartons. List Price $15.00

SPECIAL PRICE $9.25 ea.

American Sales Co., 21 Warren St., N.Y.C.

5. All R.S.G.B. country corporate members to pay an annual subscription of 15s. in order to bring them into line with T. & R. members. (The present subscription is 10s. 6d. per annum.)

6. The present T. & R. Committee to remain in office and to be the Transmitting and Research Committee of the Society.

7. The present Editorial Committee to remain in office for the purpose of dealing with Editorial and Publicity matters.

For any further information on this, see the June, 1927, issue of the T. & R. Bulletin from which this was taken.

We also understand that Mr. H. Bevan Swift is now the Hon. Secretary of the Society.

FINLAND

The amateurs of Finland are organized into a league called the Suomen Radioamatööriliitto or abreviated as the S. R. A. L. There are about 50 members in it. Powers up to ten watts are allowable under regular amateur licenses and special licenses have been awarded allowing as high as 500 watts to be used. The country is divided up into nine districts and since June, the old first and second districts have been reversed. That is, stations in the old first district are now considered as being in the second district and second district ones are now in the first district. Old es2CO is now known as es1CO.

FRANCE

"The Reseau des Emmetteurs Francais has completely reorganized its services in order to give its members advantages which they have not heretofore had. Nineteen sections have been created in France and the principal French colonies. Each section is composed of an independent chief.

"QSL cards that are to be forwarded to French amateurs should be sent to Mr. Larcher, B. P. 11, Boulogne-Billancourt, (Seine) France.

"To facillitate matters and carry on the work, a nummber of special delegates has been assigned to take care of various phases of it. For technical questions address Mr. Chaye Dalmar, 8GM, Rue Luzel, Saint-Brieuc (Côtes-du-Nord). For 32-meter band work, Mr. Thomassin, 16 bis Boulevard St. Jacques, Paris. The 20-meter band work is under Mr. Reyt, 8YOR-8FD, Professor of Physics, Lycei de Orleans, Orleans, France. The 10-meter band is headed by Mr. Levassor, 8JN, 5 Rue du President Despatys, Melun, (Seine & Marne) France, while phone transmission is in charge of Mr. Veuclin, 8BP, á Rugles (Eure) "Journal des 8".

"In the 32-meter band, good conditions for DX were had during April and May. The signals of 8QRT were reported in Japan by a aj3AA. 8YOR has been in contact with AQE and has received fine reports from Johore (Malaya) and the *SS Paul Lecat* at Shanghai.

"A large amount of activity has taken place in the 20-meter band. Signals get over the Atlantic to the U.S.A. starting

CORWICO

"Braidite"

To make a soldered connection, it is not necessary with Braidite, to strip back the insulation. The braid is simply pushed back while the soldering is done and then replaced, thus making the neatest possible connection. Made in red, green, yellow, brown and black.

Radio's Best Wire
"From the Ground Up"

"Corwico" is the wire used by Mr. John Harrison Hartley, holder of the world's international set building championship, leading set manufacturers and hundreds of professional and amateur set builders. Next time you need wire, try "Corwico."

"Corwico" radio wires are sold by all leading dealers. Write for free copy of interesting booklet on radio wires and their uses.

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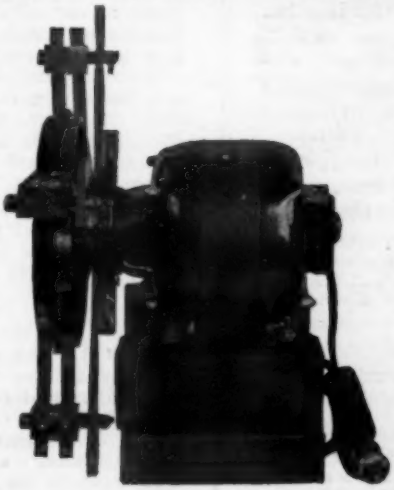
THE SUPER SYNC
The Synchronous Rectifier That Can Be Filtered

If you want your ham transmitter to rival commercial performance with the power available, we recommend crystal control with super sync plate supply. This combination gives you the ultimate in modern short wave transmission. By using such a method you obtain an output that only commercial apparatus can duplicate. Crystal control of your transmitter provided with super sync plate supply will materially reduce the size and capacity of the high voltage filter. This is no small item when high power is used. The wave is of course steady to an unparalleled degree and the tone beyond comparison. Another advantage of this system is that it can be applied to either low or high power transmission. In other words by installing a super you have prepared your station for the future should you desire to increase power.



PAT. PENDING

Price Now $55 F.O.B. St. Louis, Mo.

MARLO ELECTRIC CO., 5241 Botanical Ave., St. Louis, Mo., U.S.A.

permanently when Sangamo Mica Condensers are used.

Condenser accuracy is not only measured by factory tests of value—it is determined by permanence after heat of soldering, work box knocks, and a year or more of service under all atmospheric conditions!

Sangamo condensers are accurately rated (within 10 per cent of marked value) and of greater importance—they stay accurate. A solid sheathing of pressure-molded bakelite makes that certain.

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SANGAMO

MICA CONDENSERS

$5.50 buys this famous cabinet

Our dealing direct brings this cabinet to you at half the usual retail price. Made either from selected hardwood, with Mahogany finish or from solid Walnut, rubbed to a beautiful piano lustre, the Iveyline Cabinet makes a fitting climax to your set-building efforts. It has full length, nickeled piano hinge, nickeled lid support, rubber feet to prevent vibration and lid splined to avoid warping. Fully illustrated catalogue available. Just write. If you send us your orders today, the cabinet will be on its way within 12 hours from receipt of order. Select your size and finish and mail your order today. Cash with order or if C. O. D. half price with order.

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"The Iveyline" made in 12 different sizes

Solid Walnut or Mahogany Finish

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Cabinets also made to order

Ask for full particulars

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UNLIMITED POWER

Back of your transmitter. A filamentless, full wave rectifier of limitless life and possibilities that will handle any transmitting load and voltage up to 6,000. You want a mercury arc rectifier—It will put your station on the map. Complete installations, parts, information. We'll solve your rectifier problems.

RECTIFIER ENGINEERING SERVICE
Radio 8ML, 4837 Rockwood Road, Cleveland, Ohio

from 1600 G.C.T. and particularly on Sundays, the QSOs are numerous. On May 1st, 8YOR was QSO oa2UK, this being the first contact between Australia and France on 20-meters. The most remarkable thing is the regularity and strength with which the Californians and Hawaiians are heard on this band. Stations 8CT and 8YOR during the months of April and May made a very large number of such contacts. The Californians have a signal strength that is extraordinary. The most regular are 6ZAT, 6VZ and 6CKV. The first QSO between Europe and Hawaii took place on the 30th of April between oh6AXW and ef8YOR. The contact has been repeated several times since then.

"ef8JN has organized some regular tests on the 5-meter band in collaboration with 8BF, 8CT and OCMV (military station at Mont Valirien). Regular QSOs have taken place between 8JN and OCMV. The distance is about 50 km. (roughly about 30 miles) using a push-pull system with 100 watts a.c. input.

"Some tests were made as to the capability of transmitting and receiving while underground. At a depth of 400 metres in a coal mine at Bruays (Pas de Calais), 8DU, 8JN and 8JF were unable to get any results whatever. However, some tests by 8FC and 8JN in a stone cave at Saint Golain (Aisne) have shown that it is possible to both transmit and receive at this depth. The signals of 8REF installed in this cave have been reported by a number of amateurs and contact was established with 8LGM, a distance of 450 km. (280 miles.)"

—J. Reyt, ef8YOR-8FD.

HOLLAND

The accompanying photo shows the equipment at enOGA. QSL cards may be sent to him c/o I.A.R.U., Hoogduin, Noordwijk, a/2, Netherlands.

Two transmitters are in use. The larger one has an input of 250 watts using either 4200 volts a.c. or 1900 volts r.a.c. Two Phillips valves are used in a Hartley circuit and is used on waves between 10 and 180 meters.

The smaller transmitter employing one Phillips 10-watt tube and the input may be varied between 1 and 30 watts. 500 volts a.c. or 200 volts r.a.c. or d.c. may be used.

ITALY

"The A.D.R.I. and R.C.N.I. have reunited in what is now called the Association Radiotecnica Italiana. The president of the Association is Commander Prof. Pession, Director of Postes and Telegraph of Italy. Vice-presidents are Eugenio Gnesutta, 1GN and Franco Marietti, 1NO. General Secretary is Ernesto Montu, 1RG and the Vice-Secretary is Franco Pugliese, 1FP.

"The members of the I.A.R.U. Section are expected to join with the A. R. I. which will give an organization having practically all the amateurs of Italy as members. All

JEWELL

Radio Set
Analyzer

Pattern No. 133 Radio Set Analyzer

The Jewell Pattern No. 133 Radio Set Analyzer designed for radio service work will be found particularly adaptable to service calls of a contract nature requiring monthly inspection of sets.

Its operation is very simple. With the plug of the analyzer in place in the socket of a radio set and the tube in the socket of the analyzer, complete characteristics of the stage can be obtained. A, B and C voltages, plate current and grid bias are instantly obtained by pressing the proper push button. In addition, a grid shift push button is furnished and gives a direct indication of tube conditions. It is a tube tester as well as a radio service set.

There are no complicated switches to get out of order and pressing the wrong push button does no damage, in fact, they can all be pressed at one time without injury.

Write for descriptive circular No. 115.

Jewell Electrical Instrument Co.

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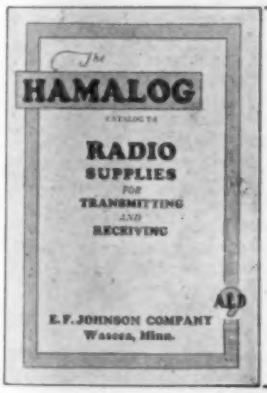
"27 YEARS MAKING GOOD INSTRUMENTS"



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have this catalog, in addition to four thousand Broadcasters, State Universities, dealers, etc. There's one ready for you. Just mail a card saying "Send the Hamalog, the Original Ham Catalog, free".

At the right is our new No. 20 Stand-off Insulator, extremely popular for many uses in transmitting sets. You will acknowledge its superiority over any other. Price.....$0.20

In a short time we will announce the first really complete reliable line of transmitting filter condensers. 1, 2, and 4 mfd. sizes for working voltages of 600, 1000 and 2000 D.C., tested at double voltage. Ask for information.

Cut 1-2 Size

E. F. JOHNSON CO. **Waseca, Minn.**

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TOBE

Trade Mark Reg. U. S. Pat. Office

The TOBE Transmitting Condensers are made with the same care and scrupulous attention to detail as the TOBE Condensers now so generally used in broadcast receivers and B Eliminators. Each transmitting condenser is tested and labeled with date of test and initials of tester. Capacities are guaranteed within 5% of ratings. 1,000-volt condensers are made with heavy brass binding posts, 2,000-volt condensers have brass bolt connections with petticoat insulators. Each condenser is enclosed in a heavy, silvered-finish metal case.

		PRICES		
Capacity Mfds.	Type No.	1,000 Volts	Type No.	2,000 Volts
.1	1001	$2.50	2001	....
.5	1005	4.00	2005	....
1.0	1010	5.00	2010	$8.00
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NEW YORK'S HEADQUARTERS
For Transmitting Apparatus

Full line of Acme -- Thoradson -- Jewell Flechtheim -- General Radio -- Signal -- Bradley

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Faradon U.C. 1803 Condenser cap. .000025--10,000 volts . . .	45c
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Genuine Bakelite Panel 10 x 14 x ¼	1.50
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MAIL ORDERS PROMPTLY FILLED
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A Tube for Every Radio Need

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General Purpose
Special Purpose
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Filament Type
Rectifiers
Gas Filled Rectifiers
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C. E. Mfg. Co., Inc.
Providence, R. I.

BECOME A RADIO OPERATOR

See the World. Earn a Good Income
Duties Light and Fascinating.

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Radio Inspector located here. New Orleans supplies operators for the various Gulf ports. Most logical location in the U. S. A. to come to for training

Practically 100% of radio operators graduating on the Gulf during the past five years trained by MR. CLEMMONS, Supervisor of Instruction. All graduates secure positions.

Member of the A.R.R.L.—Call "5 G R"

Day and Night Classes—Enroll anytime—Write for circular.

GULF RADIO SCHOOL
844 Howard Ave. New Orleans, La.

members receive the monthly organ, "Il Radiogiornale", the subscription price of which is 40 lire. QSL cards may be addressed to the A. R. I. at Viale Bianca Maria 24, Milan, Italy.

"The A. R. I. has promoted a transmitting contest and some of the prominent

en0GA

contestants are 1AY, 1NO, 1CR, 1MA, 1UU and 1AU. 1AU has been doing some very fine work with an input of only 3 watts. 1NO has worked New Zealand and all continents on phone with 15 watts input.

"It would help matters considerably if all amateurs out of Europe would use wavelengths above 33-meters as work below this wave is difficult due to European QRM."

—*ei1NO*

SOUTH AFRICA

We understand that the "first contact" mentioned on page 69 of the April issue to be in error and that the honor of making the first "oz-fo" contact belongs to foA5Z and oz4AA as described on page 72 of the July number.

Oxenham of A4L who has been supplying the South African news during the past has resigned and this work is being carried on by A3X who is now the International Secretary of the South African Radio Relay League. We are sorry that A4L is no longer one of our active correspondents. He could always be relied upon.

QRAs

edOXZ—Radioingeniarkontonet, Walkendorfsgade 2, Copenhagen, Denmark.

EZ5—Cpl. Henry P. Karr, Hq. Btry. 4th U.S.F.A., Gatun, Panama, Canal Zone.

oz3AU—Owen Hills, 97 White Street, Rangiora, New Zealand.

oa3CP—C. Patterson, Burke Rd., E. Malvern, Victoria, Australia.

oa3ES—E. Yorston, Hawthorn Rd., Caulfield, Victoria, Australia.

oa3HR—Alan Reid, Kingston Street, E. Malvern, Victoria, Australia.

oa3RB—R. Bussacott, New Street, Elsternwick, Victoria, Australia.

OC7—Station installed at the Como Exhibition by the Italian Navy. QSL to Mario Santangeli, S. Eufemia 19, Milano, Italy.

Permanent Accuracy!

AEROVOX Fixed Mica Condensers stay accurate because they are moulded in genuine Bakelite and are sealed and protected against possible injury, moisture or chemical action.

A special process in the manufacture of the condenser element enables us to manufacture and guarantee them to be within 10% of their marked rating.

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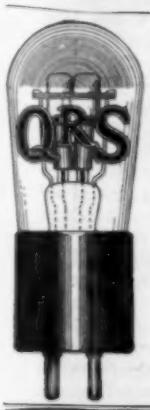
70 Washington St., Brooklyn, N. Y.

For Your "B" Battery Eliminator, Ask Your Dealer for Guaranteed



Q·R·S
Trade Mark Registered

Gaseous Rectifier Tubes
ARE BETTER

60 Milliamperes **$4.50**
85 Milliamperes **$4.50**
400 Milliamperes With Ironizer—300 Volts for A, B and C Eliminators with Charts and Diagrams **$7.00**

Manufactured by
THE Q·R·S MUSIC COMPANY
Est. 1900 CHICAGO
References: Dun, Bradstreet, or any bank anywhere

FREE Wholesale Radio Catalog

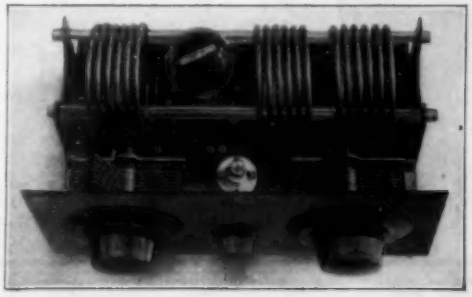
Our new **1928 catalog** is jammed full of the newest offerings of nationally known radio parts, kits, sets, accessories, table and console cabinets, etc. Whatever your radio need may be it's in our 1928 catalog. Also contains ***Short Wave Section*** showing the finest receiving and transmitting apparatus. Write for this big ***catalog***—and for our confidential discount sheet—but write immediately.

SHURE RADIO CO., 335-H Madison St., Chicago, Ill.

THE HELICON

RADIO CONDENSER CORPORATION, Peoria, Illinois

IMPROVED PARCO S. W. TRANSMITTER $20.00



This set designed to use the 7½ watt tube and to operate in the 40 meter band. Comes completely wired and tested with full set of instructions—guaranteed to perk! Another DX getter is the PARCO S. W. receiver with plug-in coils only $17.50. This comes with coils for 40 meter band. Others on request. Watch for our new transmitting inductances, they will be better! Prepaid if M. O. is sent with order.

Order now!

PARMATER PRODUCTS CO.
LANSING 8NX - - MICHIGAN

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FROST-RADIO

DE LUXE APPARATUS

Your dealer now can furnish Frost - Radio De Luxe Rheostats and Potentiometers, Variable High Resistances and Fixed Resistances — the NEW Frost Apparatus with highly polished hand buffed nickel plated metal parts and a remarkably wide range of resistances. Rheostats and Potentiometers have genuine flexible Bakelite strips on which resistance wire is wound, absolutely preventing charring, warping or distortion. Also new style Bakelite Knobs with white engraved pointer. May be obtained with filament switch at slightly higher cost. There is no higher quality apparatus than the new Frost De Luxe line. Secure from your dealer today.

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MAIN OFFICE and FACTORY
ELKHART, IND.

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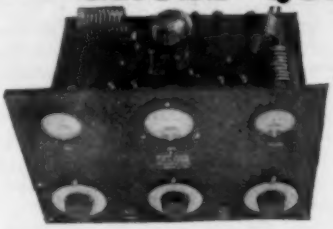
GROSS QUALITY APPARATUS



GROSS TRANSMITTER KITS

Transmitter kits as illustrated composed of highest grade parts available, thoroughly metered, Not revamped receivers.

Tuned Grid, Tuned Plate Type

7½ W $47.50
75 W $65.00

Coupled Hartley Type

7½ W $43.50
75 W $65.00

GROSS RECEIVER KITS

Gross short wave receiver kits are composed of high grade parts such as Gross plug-in coils, Hammarlund Midline condensers, vernier dials and other high grade parts necessary to complete the receiver.

Supplied with plug in coil for any band you specify, 20-40-80 or 200 meters. Extra coils $3.00 each.

2 Tube Kit (Wired to order $1.50 extra) .. $17.75
3 Tube Kits (Wired to order $2.00 Extra) ...$21.75

GROSS WAVEMETERS

A high grade precision instrument at 1/3 the usual market price. Built into compact carrying case of genuine solid oak, leather handle on top with removable cover. Coils extremely low loss making a very low resistance wavemeter either the flash lamp or galvanometer type will easily respond to an oscillator using 50 volts or less on the plate of the tube. Coils fit into holder in the cover. Calibration better than 1% guaranteed.

Type 1—L—with flash lamp indicator for 20, 40, 80 meter bands $15.00
Type 2—L—with flash lamp indicator for 20, 40, 80 and 200 meter bands $18.75
Type 1—G—with galvanometer indicator for 20, 40, 80 meter bands $30.00
Type 2—G—with galvanometer indicator for 20, 40, 80 and 200 meter bands $33.75

No C.O.D. Shipments. Frequency meters for broadcast stations $75.00. Q.S.T. Listen for our Amateur station 2 A U D operating on 39.5 meters. Code lessons for beginners transmitted on the Teleplex. Send stamp for schedules. Tests Invited.

J. GROSS & COMPANY, 30 Park Place, N. Y. City

Seventh Edition Just Off the Press

ROBISON'S MANUAL OF RADIO TELEGRAPHY AND TELEPHONY

Completely Revised and Up-to-Date

Of the 6th edition of this book reviewed by QST it was said this is perhaps

"The Best Radio Book That Ever Came To This Desk"

The standard Navy book on radio originally prepared in 1907 by Lieutenant (last year Admiral and C-in-C of U. S. Fleet) S. S. Robison. The 6th edition and the present edition revised by Commander S. C. Hooper, U. S. Navy, late Radio Officer, U. S. Fleet.

Price $5.50 postpaid (former edition sold for $8.00)

Address: Secretary-Treasurer, U. S. Naval Institute, Annapolis, Md., U. S. A.

FILTER CONDENSERS

Manufactured by Dubilier Condenser & Radio Corp.

1¾ mfd. 1000 volts rated D.C. Working Voltage Extra Special at **$1.35** each

7 mfd. 600 volts. rated D.C. Working Voltage Extra Special at **$3.50** each

Manufactured by Stromberg-Carlson Tel. Mfg. Co.

3½ mfd. 600 volts rated D.C. Working Voltage Extra Special at **$1.75** each

All of these High Quality Filter Condensers, are brand new, and guaranteed as rated. They are excellent for use in your Transmitter, Eliminator or Experimental Work.

AMERICAN SALES CO. **21 Warren St. N.Y.C.**

Hoyt
B
ELIMINATOR
VOLTMETER

A new sensitive voltmeter, for regular Dealers' service work as well as for laboratory and precision measurements. Resistance 1,000 ohms per volt. Provided with two scales,—0-100 volts and 0-500 volts, covering the entire range of ordinary B-Eliminator and Power-Amplifier work. Prices, HOYT Standard B-Eliminator Voltmeter, 0-100 and 0-500 volts—$28.00.

Supplied on special order with additional scale, either: —0-10 volts or 0-100 ma. at $32.50.

Send for Price list 2-9

BURTON-ROGERS CO.

Sales Dept. for Hoyt Electrical Instrument Works

BOSTON, MASS.

RADIO OPERATORS WANTED

THE EASTERN RADIO INSTITUTE can train you quickly and thoroughly because:

MODERN AND EFFICIENT METHODS
THOROUGH INSTRUCTION under staff of LICENSED COMMERCIAL OPERATORS
MODERN APPARATUS including SHORT WAVE TRANSMITTER
FIFTEEN years a RADIO SCHOOL
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AERIAL MAST

$10 and up. We pay the freight. All steel construction. 20 to 100 ft. high. Roof or earth type complete with guy wires, masthead pulley etc. Write for full details. S. W. Null Co. Dept. 6 2048 E 79th St., Cleveland, Ohio

Why is the Karas Equamatic the most efficient receiver ever designed? Write us for full information.

KARAS ELECTRIC CO.,
4030-G North Rockwell Street, Chicago, Ill.

"Communications Manager, 1711 Park St., Hartford, Conn., U.S.A."

5. If there is any doubt at all that the time is sufficient please transfer the tests to the next month; it is better to make a completely announced test later.

6. Schedules should not be sent by radio except in emergencies since several have been wasted in this way. If radio transmission is absolutely unavoidable please make sure of the following points. A—The receiving station must be asked to repeat back the entire schedule to assure that it has been received correctly. If the station does not wish to do this please say that it is by request of A.R.R.L. Headquarters. B—Be sure that the receiving station understands that the schedule is to be forwarded immediately. C—Please be sure to arrange immediately several additional schedules with the American station so that the *QST* office may communicate with you if necessary. Failure to do this also has destroyed two schedules. D—Finally insist that the American receiving station must transmit the schedule by mail unless it can be given to 1MK directly as additional relay stations will not understand the details above.

——*R. S. K.*

A.R.R.L. Information Service Rules

Please help us by observing the following rules:

1. Keep a copy of your questions and diagrams and mention that you did so.

2. Number the questions and make a paragraph of each one.

3. Make diagrams on separate sheets and fasten them to the letter.

4. Print your name and address (not merely your radio call) on your letter. Don't depend on the return address on the envelope as this is destroyed when the letter is opened.

5. Don't ask for a comparison of the various manufacturers' products.

6. Before writing, search your files of *QST—the answer probably is there.*

7. Address all questions to Information Service, American Radio Relay League, Inc., 1711 Park Street, Hartford, Conn.

8. It is not essential to enclose an envelope as long as you supply postage and PRINT CLEARLY your name and address on your letter.

Hey, Ham—
ave u ordered ur copy of
andy's
andy
andbook?

THE BEST $1 YOU EVER SPENT!

PUBLISHED BY
AMERICAN RADIO RELAY LEAGUE
1711 PARK ST., HARTFORD, CONN.

Calls Heard

(Continued from Page 61)

2vd 2hc 2euq 2amf 2aqw 2ayj 2gx 2ags 2tp 2apd 2ic 2bon 2abv 2jx 2lm 2beo 2xg 2box 2cuz 2alm 2fo 2ag 2aul 2ccd 2buy 2avr 2bem 2tp 2aer 2cvo 2sg 2wc 2du 2ox 2bsl 2apa 2axy 3oq 3ps 3ld 3ahl 3bhy 3ajh 3agd 3pf 3fh 3gi 3qf 3gp 3ld 3ckj 3yu 3akw 3adl 3kr 3hs 4cj 4hz 4uz 4iz 4ok 4dd 4km 4bx 4if 4qq 4bn 4nh 4bl 4oh 5mi 8dei 8djg 8adg 8xe 8cpf 8kp 8lt 8bjb 8fr 8bbe 8alb 8akc 8afq 8clp 8cnx 8crv 9aeb nc-2fo nc-2be nc-2ax nc-1bm nc-1ad nc-1dm nc-3hp nc-3cfg nc-3wab nn-1nic nq-2cf nq-8kp nr-3gph nr-2rg nr-2fg ni-3ag ni-tfhv nj-2pz ni-2t nj-4je np-4sa nd--hik ne-8rg af-1b ai-2kx ai-2kp sa-de3 sa-bg8 sa-db2 sa-bq6 sa-fc6 sa-cb8 sb-1aw sb-5aa sb-2ag sb-1ar sb-2am sb-1aj sb-1ap sb-1al sb-5ab sb-1ic sb-1id sb-1br sb-1ao sb-1ck sb-1bl sb-1ax sb-2ab sb-so1 sb-2ax sb-2as sb-2bz sb-2ar sb-2sh sb-3ag su-1oa su-1cx su-2ak su-1cd sn-cbz oa-2yi oa-7cw oa-3bd oa-5bg oa-5hg oa-7cs oa-2rc oa-2rx oa-7pf oa-7sh oz-3ar oz-2ae oz-4av oz-2bg oz-4ae oz-2al oz-2gc oz-2gs oz-2av oz-4aa oz-1ax oz-3aj.

el-1GW, Bruno Brunacci, via E. Torricelli N. 1, Roma, Italy

(Heard during June on 20 meters)

1bux 1vw 1axa 1sw 1aep 1du 1py 1wl 1ccz 1ia 1byx 1bhm 1caw 1ben 1cmf 1ii 1rf 1byv 1ajm 1aff 1adm 2tp 2aol 2gp 2jn 2ch 2agn 3tn 3xan 3akw 3nb 4dv 5aga 5dfe 6zat 8adg 8afq 8axd 8aj 8clp 8dod 8aks 8aly 8bev 8dhx 9cmv 9bht 9cli 9adn 9dij nc-2bg nc-1br nc-9bz sa-db2 sa-fc6 sb-1aw sb-1ac sb-1ad sb-1ib sc-2ar sc-2ah oa-5bw.

Soc. An. Brev. Arturo Perego, H Consigliere Delegato, Milano, Italy

1ch 1ckp 1air 1rd 1aw 1bhb 1cmp 1cmf 1py 1gr 1bi 1apz 2ha 2bg 2ahm 2aev 2xac 2nz 2bum 2gd 2gk 2cwj 2aje 3aha 3hd 3pf 3az 4rz 4tv 4jm 4ac 4gy 4rm 6yw 6zu 6qa nm-9a oz-1fq ai-2kw ai-2kp sa-hda sa-fc6 af-1b op-1au nr-cto oz-4ak oz-4am oz-4ag oa-3wm oa-3bd ntt mstb.

Hecker Bros., Camp Street, Temora, N. S. W. Australia

1aur 1ic 1bux 1cmx 1ql 1kk 1bhs 1caa 2uo 2ahm 2cuq 2cjx 2gx 2crb 4km 4fa 4si 4fu 5jf 5ql 5zav 5agq 6aix 6ax 6am 6bpm 6bxi 6ew 6css 6auk 6rn 6avb 6jn 6hm 6bhm 6ajm 6av 6cmq 6bav 6km 6bwk 6ahp 6ta 6cua 6ja 6bvw 6fr 6ram 6bgv 6ea 6bjl 6rb 6bfg 6zt 6ud 6er 6dgo 6cng 6ayc 6dgq 6jp 6cwk 6alz 6chn 6ckv 6rj 6ccr 6aak 6dh 6bhz 6dfs 7ek 7mx 7tx 7agj 7ou 7tm 7lr 7fq 7df 7sk 7fh 7ec 7xf 7mo 8dan 8dld 8cvs 8gz 8im 8ced 8akk 8dea 9cvn 9efo 9doe 9awg 9bwn 9gj 9dr 9arn 9xi 9dng 9bpm 9eez 9asd 9cei 9ei 9xa 9eas 9cet 9cfu 9pu 9ctg 9auu 9axb 9cnl oh-6ajl oh-6buc oh-6bdl oh-6axw oh-6nl oh-6acg oh-6akp oh-6dey oh-6cxy oh-6ch oh-6aof aj-jkzb aj-1sm aj-1sk aj-jes cb-F2 nj-2pz oz-4ai oz-4aa oz-1fq oz-3aj oz-2gc oz-2bg oz-1fb oz-1fs oz-2ga oz-2bd oz-3cc oz-2at oz-1ap oz-2xa oz-1an oz-2gg oz-1fd oz-3ai oz-4am oz-3ac oz-3cg oz-2ab oz-3ap oz-2ae oz-2nj oz-2bx oz-4ac oz-4ae oz-vlb ef-8max ef-8jj ef-8yor ef-8jf ef-8cl ef-fw ef-ocdj op-1dl op-1bd op-1hr eb-4zz eb-4ac af-1b af-hva nc-3wab nc-5aj ep-1ae od-and od-ane od-pkh od-pxx su-2ak oo-bam ac-8zw ac-8hb ek-agb ek-age sc-2bl oc-8xz en-perr na-7kx arcx aqe knt ds voc de-8pf f8zv ocv olq viz glq fu9 cw4 tve 6xi xd 8ol hzai.

oz-2BJ, Allan Evans, 269 Taranaki St., Wellington, New Zealand

(Heard during March, April and May)

1de 1xr 2aon 2or 2uo 4bl 4dl 4km 4ll 4ok 4ql 5bf 5jf 5kl 5pr 5ql 5za 5zav 6aat 6abg 6adn 6aeh 6akp 6alt 6am 6ane 6apf 6avb 6awq 6bap 6bav 6bc 6ben 6bg 6bgb 6bgv 6bhv 6bhz 6bih 6biu 6bjv 6bk 6bkd 6bon 6bpm 6bwh 6bwk 6bzf 6cck 6cco 6civ 6cmq 6cnk 6cpv 6csj 6css 6csw 6ctx 6cua 6cus 6cwk 6cww 6cys 6czu 6czz 6dam 6dau 6dev 6dey 6dfe 6dfr 6dfs 6dfu 6dgq 6ea 6eb 6er 6ewv 6ga 6hu 6ja 6jn 6ju 6kb 6kh 6lt 6oa 6pm 6pq 6pv 6rn 6ta 6va 6ve 6xi 7acf 7df 7eb 7ec 7fh 7fs 7gj 7gk 7lz 7no 7ou 7ox 7sk 7tm 7uj 7vq 7we 7wu 8bww 8ccm 8dld 8es 8lt 8rh 8vz 9adg 9aek 9auu 9axb 9arn 9bwl 9caj 9cei 9cet 9ckf 9cpm 9ctg 9cv 9doh 9dr 9dws 9eev 9efs 9ekf 9na 9ql 9sf 9uu 9xi na-7mn oa-2ay oa-2bg oa-2cm oa-2cy oa-2dy oa-2hs oa-2jt oa-2jy oa-2mh oa-2py oa-2rb oa-2rc oa-2re oa-2rg oa-2ro oa-2rt oa-2sa oa-2ah oa-2sa oa-2tm oa-2uk oa-2wb oa-2wc oa-2xi oa-2zy oa-2yj oa-3al oa-3bq oa-3dc oa-3ef oa-3es oa-3gf oa-3hl oa-3mm oa-3rb oa-3vp oa-3wm oa-3zy oa-4ab oa-4az

Announcing

A NEW TYPE HEAVY DUTY WIRE WOUND RESISTOR

THE Harfield Resistor—invaluable for use in all circuits where accuracy and permanence of ohmic value is absolutely essential.

Wound on a special tubing, which insures a uniformity of physical dimensions and almost perfect insulation.

Covered with a specially roughened, very durable cement which gives a greater cooling surface to prevent over heating.

Guaranteed plus or minus 5% under average load conditions.

Available in various values up to 50,000 ohms with capacities up to 10 and 20 watts. Tapped resistors may be obtained to meet the specific need of manufacturers and experimenters.

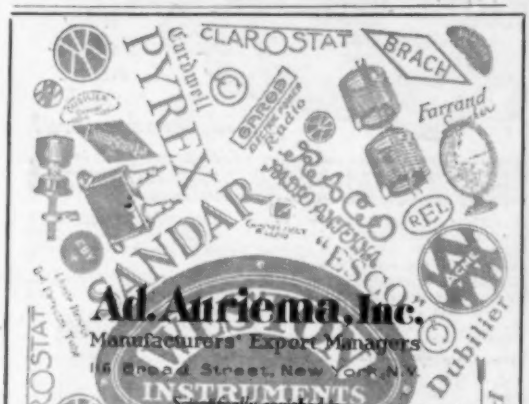
Made for all popular power packs and B Eliminator kits. *Write us* for complete information.

HARDWICK, FIELD, Inc.

General Sales Office
100 Fifth Ave.,
New York

Factory
215 Emmett Street
Newark, N. J.

for Permanent Accuracy



GRIDLEAKS

15,000 ohm, tapped at 5,000 and 10,000 ohms with 85 watt capacity..... Price, $1.50
20,000 ohms, 85 watts for UX852 .....1.50
5,000 ohms, 85 watts 1.00
5,000 ohms, 20 watts for UX210 only.....75

UX210 TRANSFORMERS

Filter Chokes

200 Watt Size—Plate winding for full wave rectification, supplying 1100 volts with center tap at 550 volts. Has two 7.5 volt center tapped filament windings for UX210 and UX216 B tubes. Wgt. 14 lbs. Price $12.50

100 Watt Size—Plate winding supplying 750 volts for bridge rectification. No center tap. Has two centrr tapped 7.5 volt filament windings for UX210 and UX216 B tubes. Wgt. 11 lbs. Price $9.50

50 henry 100 milliampere filter choke, 4 lbs. $5.50
100 henry 50 milliampere filter choke, 4 lbs. $5.00

Add for Postage

UTILITY RADIO CO.

80 LESLIE STREET EAST ORANGE, N. J.

Model "N" Vario Denser

Why Experiment with Fixed Condensers?

Accurate Grid Condenser values for short wave work is vital. X-L Vario Densers adjust perfectly to balance out oscillation. Install a G-5 Vario Denser in your detector grid circuit, reduce capacity and increase resistance for 100% results.

MODEL "N"—Micrometer adjustment easily made, assures exact oscillation control in all tuned radio frequency circuits, Neutrodyne, Roberts 2-tube, Browning-Drake, Silver's Knockout. Capacity range 1.8 to 20 Mfd. Price $1.00.

MODEL "G"—Obtains the proper grid capacity on Cockaday circuits, filter and intermediate frequency tuning in super-heterodyne and positive grid bias in all sets. Capacity range, Model G-1 .00002 to .0001 Mfd. Model G-5 .0001 to .0005 Mfd. Model G-10 .0003 to .001 Mfd. Price each with grid clips $1.50.

X-L PUSH POST—Push it down with your thumb, insert wire, remove pressure, wire is firmly held. Vibrations will not loosen, releases instantly. Price each 15c.

Also in strips of 7 on black panel marked in white. Price $1.50.

X-L PUSH POST

FREE New, up-to-date book of wiring diagrams showing use of X-L units in the new LOFTIN-WHITE constant coupled radio frequency circuit, and in other popular hook-ups. Write today.

X-L RADIO LABORATORIES, 2428 No. Lincoln Ave., Chicago, Ill.

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Send for Catalogue

MASSACHUSETTS RADIO and TELEGRAPH SCHOOL

NEW TERM SEPT. 12

18 Boylston St. Boston, Mass.

oa-4bd oa-4cm oa-4gf oa-4go oa-4nw oa-4rb oa-5ax oa-5bg oa-5by oa-5dx oa-5hg oa-5jn oa-5kn oa-5lf oa-5wa oa-7ah oa-7bq oa-7cs oa-7cw oa-7df oa-7dx oa-7hl oa-7lj eb-4ww nc-5aj nc-9bz sc-2bl nr-cto ef-8nqm oh-6acg oh-6ajl oh-6akp oh-6amu oh-6asr oh-6axw oh-6bc oh-6bdl oh-6brk oh-6buc oh-6bwr oh-6bwv oh-6ch oh-6cfq oh-6clj oh-6cxy oh-6dba oh-6kqv oh-6nl oh-sh aj-1kzh oc-8xs oz-1aa oz-1ab oz-1af oz-1aj oz-1ak oz-1an oz-1ao oz-1ap oz-1au oz-1az oz-1fb oz-1fd oz-1fm oz-1fq oz-1fs oz-2ae oz-2ah oz-2aj oz-2al oz-2as oz-2nt oz-2av oz-2ay oz-2ax oz-2bd oz-2bg oz-2bp oz-2bx oz-2ga oz-2gc oz-2gg oz-2me oz-2xa oz-3ac oz-3af oz-3ai oz-3aj oz-3al oz-3ad oz-3ap oz-3ax oz-3cc oz-3ck oz-4aa oz-4ac oz-4ae oz-4ak oz-4am oz-4an oz-4ao oz-4ap oz-4aq oz-4av ns-6ddn knh knt wvx 1xr ardi aqe vlb pdq.

su-1AM, A. Mantegani, Jr., P. O. Box 37, Montevideo, Uruguay

(20 meters)

2xt 2ahm 4tu 4xe 6dan 8buh 9kv eg-5wq sc-2ar sc-3ag pqw wik wgy.

(40 meters)

1bhs 1cmx 1abz 1kf 1cmr 2ahm 2amj 2czr 2rs 2apd 2ti 4cv 5acl 6ahp 6cuc 6bmk, 6bjx 6baf 6cbj 6bhz 8dei 8epf 9caj 9ep ac-8em aj-1km aj-1sm ef-8sm ef-8jf cf-8jj eg-6td eb-4ww fc-f2 fo-a4l fo-a3x nr-2fg nc-1ad ny-irc oh-6clj bxy dcp lw oic oxx sol sfv spw rg ohk.

nm-1C, M. Veramendi, Sor Juana 119, Mexico, D. F.

1atv 1fc 2ahl 2ay 3wf 3nc 4ng 4ay 5wa 5auz 6bjl 6ud 7aam 7tm 8bac 8dal 9ctu 9cfn nc-5ya.

Canal Zone Amateur Radio Club, Fort Amador, Canal Zone, Panama

(Heard between June 14 and 27)

1adm 1afa 1awo 1bgq 1bhs 1bms 1bux 1cjh 1cmp 1cmx 1mo 1mu 1mv 1on 1vc 2aef 2agc 2ags 2ahb 2ahl 2ahm 2amj 2ang 2anm 2anx 2aou 2apd 2apo 2av 2ax 2ayj 2bdk 2bi 2bq 2bsc 2crx 2cyx 2fa 2fg 2fs 2gs 2gx 2hr 2kr 2ku 2mb 2qs 2ro 2yt 2zv 2zx 3afl 3afu 3alz 3aqy 3bco 3bqj 3cbc 3ckl 3cnt 3cp 3ep 3mz 3nr 3pr 3qw 3ss 3sz 3tf 3tn 3tu 3vf 4anr 4ac 4af 4ar 4ck 4cl 4cp 4cu 4cy 4du 4dx 4fu 4hx 4jd 4jg 4js 4lk 4pk 4rm 4rn 4rr 4ry 4tu 4tv 4vs 4yo 5ad 5adt 5ae 5aeh 5ait 5ajr 5ame 5aox 5apm 5aq 5atp 5att 5avz 5ayd 5ayh 5bqj 5ce 5ck 5dl 5ev 5ez 5hz 5jr 5ke 5kg 5kq 5mb 5mi 5ml 5oe 5of 5qj 5se 5va 5wa 5wo 6aak 6aej 6aiv 6anc 6aod 6aqs 6aso 6awy 6bam 6bhi 6bhz 6blu 6brm 6buy 6bvc 6bxc 6bxi 6bxy 6eci 6esj 6eua 6dev 6dfe 6dfw 6ddo 6dhq 6dja 6duc 6ec 6eiw 6etv 6cag 6mm 6mt 6nw 6rn 6rv 6xi 6zro 7afq 7au 7bm 7fp 7gi 7lz 7pt 7af 7si 7ti 7tj 7tx 7us 7wu 7xd 8aad 8ae 8aec 8air 8akv 8alu 8aq 8azq 8bas 8bct 8bgw 8bha 8bid 8bou 8brr 8bta 8bwa 8byn 8cau 8cea 8ccq 8chx 8ckc 8crp 8cxs 8dgf 8djp 8dox 8ey 8jq 8jwa 8li 8oke 8old 8re 8td 8vx 9aca 9adh 9adn 9aeb 9agn 9agz 9ahq 9akt 9as 9avn 9axu 9ba 9bbh 9bg 9bht 9bin 9biy 9bkl 9bnd 9bpl 9bxi 9bzi 9bzm 9cc 9cdh 9cet 9cfg 9cjy 9co 9crd 9cxq 9eye 9dcc 9dck 9dej 9del 9dit 9dja 9dgz 9dma 9dod 9dxi 9dvt 9dzl 9ehn 9ebp 9eli 9fi 9fo 9fu 9ggz 9hl 9kf 9lk 9ma 9oih 9omt 9ow 9pc 9pu 9aj 9ak 9ax 9xm 9cya eb-4ck ef-8cq ef-8ct ef-8gb ef-8jf eg-5mq eg-5uw ek-4aci ep-1ne es-ear28 nc-3cs nc-3fc nc-8jn nc-4fv nj-2pz nm-2a nm-9a np-4sa nq-2su nr-2fr ns-5pp ns-7jf oa-1fe oa-2ae oa-2bs oa-2gy oa-2hm oa-2jq oa-2rx oa-2ss oa-2tm oa-2wj oa-2ye oa-2yi oa-2yj oa-2zn oa-3bq oa-3es oa-3jk oa-3kb oa-3lg oa-3tm oa-3wm oa-3xo oa-4aa oa-4bd oa-5ax oa-5bg oa-5bw oa-5hg oa-4wh oa-5ws oa-6sa oa-7bq oa-7cw oa-7hl oa-8ma oh-6acg oh-6acq oh-6ajl oh-6buc oh-6cxy oz-2ae oz-2ga oz-2xa oz-3aj oz-3au oz-3sz oz-4ac oz-4av sa-3fa sa-cb8 sb-1bd sb-1aw sc-2aa anc and anf aw akf cu gay gbh gfy hbc jaa jes jyz lgb muu naw nem ndn nnw ntr ocdj pic sbc spw tve ur vis voq wed kwa wnp wtt wyc wve wvt wvy wxr wxy xc61.

nc-4FV Don B. Sinclair, 205 Cambridge St., Winnipeg, Man., Can.

(20 meters)

ef-8ct ef-8yor eg-2nh eg-2it eg-2lz eg-5by eg-5hs eg-5yx eb-4aa eb-4au eb-4ax eb-4ww eb-4zx ed-7cz em-smuk sc-2ar sc-2as sc-2ah sc-3ag su-2ak nj-2pz su-1ka nr-1ur np-4sa oh-6bdl oh-6axw oh-'6acg oz-2ae oa-4bd oa-2uk nd-hik wiy.

(40 meters)

oa-2mh oa-4an oa-2cg oa-3jk oa-3wm oa-3ad oa-3lm oa-3hl oa-2bk oa-2bw oa-2ay oa-3ef oa-2cs oa-2rt oa-3es oa-7bq oa-7cs oa-2ah oa-2ij oa-2tm oa-2cm oa-7pf oa-4cm oa-5bg oa-5bw oa-3am oa-2hm oa-7cw oa-2as oa-5hg oa-7hl oa-4rb oa-2yi oa-4bd oa-5kn oa-5ay oz-4ac oz-1ao oz-4al oz-4as oz-2ae oz-1ax oz-2xa oz-2br oz-2bx oz-1fq oz-1fb oz-3ar oz-3aj oz-4aa oz-4am oz-1aa oz-2ac oz-2ga sc-2ar sc-2as sc-2ah sc-3ag sa-cb8 sb-anni sb-1aw sb-1ax sb-1ar su-2ak

Stanford Model

Cornell Model

MAGNAVOX CONE SPEAKERS

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np-4PQ, Francisco J. Cortez, Box 728, Mayaguez, P. R.
(Heard during May)

4aag 6bhx 6bxc 6clt 6cuc 6dgq 6ec 7ek nc-3ct nc-4fv nc-9mt nj-2pz nm-1n nm-1aa nn-1nic nq-8kp nr-2fg nr-2ur nr-cto nt-8af sa-cb8 sb-2ab sc-2ar sv-ayre ea-gp eb-4be eb-4ac eb-4ww eb-4au ef-8zzz ef-8fp ef-8eo ef-8jf ef-8ee ef-8oeo ef-8fk ef-8cc eg-2gb eg-5by ek-4oa ek-4uah xen-1nl es-2co ep-3fz ei-1ay ym2 xbc gla oht ca fx f8z agb b82 bl.

CR10, S.S. Canadian Traveller
(20 meters)

1adm 1aep 1bcz 2atk 3abm 3bwj 4we 5afb 5bh 5pt 6ckv 6dgo 6zi 7dm 8djg 8ata 8ben 9ara 9baf 9bcn 9bdq 9cei 9bmx 9bwn eb-4au sc-3ag oh-6bdl oz-2ac nc-9bz nc-3fc nc-4du.

KDRN, S. S. E. W. Sinclair, P. E. Curl and M. H. Patten, Operators
(Heard between Cape Hatteras and Gulf of Mexico)

1ade 1aga 1aqa 1awm 1bcg 1bes 1bfx 1bgo 1bqg 1bhm 1bi 1blf 1bnm 1bux 1cte 1cjh 1cnz 1cpe 1cra 1cti 1dc 1dl 1dw 1lu 1sz 1vz 1xf 1xr 1zz 2aan 2abp 2agt 2agu 2ahb 2amj 2ang 2apb 2aqo 2art 2ats 2atz 2aua 2aul 2avr 2avw 2awj 2awn 2awq 2bco 2bdy 2bow 2box 2bvd 2bxu 2cc 2cns 2crb 2cuq 2cxl 2ol 2rs 2sm 2so 2uo 2uoa 2wr 2vd 2xad 2xaf 2xj 2xr 3afw 3ag 3au 3auv 3bb 3bu 3cab 3cbl 3cjn 3ckl 3dz 3ep 3la 3ly 3mk 3mz 3nh 3no 3qw 3ra 3tf 3zi 3xa 3xav 4aar 4ai 4fe 4fv 4ft 4hl 4im 4in 4ke 4li 4ll 4jd 4ok 4oy 4pf 4qb 4qi 4rm 4rn 4rp 4rr 4ry 4si 4sj 4sp 4tk 4to 4vf 4vh 4xr 5acl 5ain 5aio 5aj 5akn 5amx 5aoz 5apq 5aqp 5arf 5arg 5asc 5aux 5av 5ax 5ce 5df 5di 5dik 5dl 5gc 5gu 5he 5hy 5im 5jd 5jy 5kd 5kl 5kz 5mo 5mx 5of 5on 5pi 5pk 5pt 5ql 5rg 5st 5uk 5ux 5wip 6am 6atu 6bcg 6bhz 6bpn 6bz 6cci 6cu 6cua 6cww 6dev 6er 6pv 6rx 7bd 7hi 7lz 7ox 7rh 7ti 8aef 8aex 8alg 8amu 8asf 8ayn 8axh 8axx 8bau 8bcm 8beu 8bfa 8bhz 8bin 8bno 8bqj 8bqp 8brc 8brf 8bsu 8buj 8bux 8bxp 8bxr 8bzz 8cc 8ce 8ced 8ceo 8cfk 8cfr 8ckc 8cko 8cno 8cod 8crp 8cwg 8cwt 8cxh 8dea 8dhl 8diq 8djp 8djw 8dpa 8dx 8gk 8gl 8gw 8jq 8kl 9acs 9ad 9ado 9aei 9ahd 9ahm 9aib 9ajw 9ak 9alg 9ami 9amo 9aon 9as 9awr 9axb 9axh 9beq 9bff 9biw 9bnw 9bqc 9dqe 9bqj 9bp 9bxi 9by 9bzm 9cev 9cix 9cjs 9ckf 9ep 9epm 9epy 9crj 9cyb 9czw 9cxe 9dah 9dby 9ded 9dcg 9del 9dng 9dod 9doe 9dpg 9dpi 9dpj 9dpq 9dpw 9dqj 9dqy 9dra 9drd 9drw 9enj 9eas 9eax 9ege 9ehn 9ekf 9ell 9erj 9ft 9kg 9ln 9mh 9mt 9nk 9ra 9so 9sx 9un 9uvz 9vp 9wj 9xi 9yg ef-8cc ef-8jf eg-5da ep-1ae er-5aa fg-1rn fm-8xx nc-1bi nc-3nj nc-4fv nf-4ww nm-1on nm-1k nn-2nic nq-2ef nr-2fg nt-1nic ahn c5y c6z cto dx8 fer gkq hjg kdef kfzq m3y ncy nem niss nist nit nuqg ntt ohk sda spw vis wuby wvc wvy wvz wyj wyk xah xam xcc8 xda xsc.

KDUV, S. S. Margaret Dollar, E. O. Schwerdtfeger, Operator
(Heard from Pacific Coast to Guatamala to Jamaica, W. I.)
(20 meters)

1rw 2ahm 2awq 2bck 2px 2ab 2xg 2xt 4qy 8aj 8bxa 8dds 9bqc 9dkc 9dro 9eag nc-1ar nc-3cs glq spw
(40 meters)

1ai 1aqt 1atr 1awm 1ccx 1cgc 1ckp 2abe 2agn 2aiw 2amj 2aqo 2atc 2avw 2awq 2bgj 2cgx 2cjx 2crb 2cuq 2evj 2di 2eg 2pp 2rs 2ty 2uo 2vd 2vm 2wp 3aid 3bqj 3jn 4cc 4ll 4ns 5ada 5akn 5atf 5auz 5awh 5di 5mx 5ux 6bhz 6bsd 6nw 8adj 8air 8alu 8bbs 8brf 8bun 8bxx 8cau 8ec 8cwb 8djp 8lt 8re 8wc 9ak 9bdg 9beq 9bnv 9bqc 9cjh 9cya 9cym 9dlx 9dng 9ffo 9gj 9lz 9uo x-nicj np-4bm nq-2mk hjg irl.

J. Arends, Chief Wireless Op., S.S. Leerdam
(Heard between Vigo, Spain and Azores Island)
(40-meters)

1aiq 1alr 1anz 1aqd 1asi 1at 1atv 1aw 1awm 1azv 1bhm 1bms 1bng 1bqdy 1bx 1cax 1cbh 1ch 1ck 1ckg 1ckp 1cmt 1cng 1cnz 1crb 1kh 1lg 1lj 1lx 1mr 1mv 1my 1nl 1on 1qb 1rf 1ro 1uz 1xm 1xv 2abp 2agn 2aqo 2arr 2ats 2avk 2avw 2ayn 2bdj 2blp 2bqh 2ckg 2cuq 2cw 2ewm 2cy 2di 2fr 2gp 2fn 2me 2nf

2px 2qf 2rs 2tp 2uo 2vd 2vh 2wh 3ag 3aip 3au 3bqj 3cjn 3gp 3pf 3sh 3wf 3wj 4aae 4abc 4by 4ckl 4dx 4ec 4fu 4ob 5ad 5api 5ayd 5ne 5rg 5uk 5ut 6bh 7ek 8amu 8bbs 8bcq 8ben 8bja 8bk 8bmr 8eou 8bpd 8byn 8cc 8cmm 8cwt 8dei 8dbe 8wh 8jq 8vj 8xe 9bqc 9crj 9dng 9ebm 9xm ee-ear1 ee-ear6 ee-ear28 ee-ear44 ea-ear66 es-2nd ef-8ba ef-8cb ef-8cc eef-8du ef-8ft ef-8ger ef-8kg ef-8ku ef-8lb ef-8oe ef-8pj ef-8px ef-8trv ef-8wr ef-8xix ef-8yzi eg-2gf eg-2sw eg-2xy eg-5ad eg-5ml eg-5uw ei-1aye ei-1bd ei-1cr ei-1cy ei-1dr ei-1gn ei-1uu ek-4aap ek-4ab ek-4aci ek-4af ek-4uu en-oga en-owr en-o3 eh-9xd ep-3fz el-1ala eb-4ac eb-4ww eb-4fn eb-k6 er-5na ea-cm ea-gp en-js ea-w3 ed-7zm em-smua em-smxv nc-2be nj-2ps nr-2fg sa-cb8 sb-1ak sb-1ap sb-1aw sb-2ag sb-2ax sb-7ab su-1oa su-2ak cham gfy naa niss ocdj pcg pcmm pcrr pctt pjd pwa sab sal spw wnp.

(Heard between Azores and Bermuda Islands)
(20-meters)

1aur 1axx 1beb 1bhm 1buz 1byv 1ff 1on 1sz 2alw 2ayn 2bxu 2tp 3nkw 3ee 3xan 4qb 4xe 5agq 5dq 5mx 5sh 6bxi 6ek 6bjf 6tx 8acz 8adg 8aly 8box 8btr 8ced 8dal 8dds 8ded 8agq 9bht 9bgc 9bqy 9bz 9cvn 9ddz 9efh 9ek 9eo 9jm 9sx eb-4ww ef-8ft ei-1gw nc-2al nc-2be nc-8af.

1ABA C. L. Coleman, 148 Arlington St., Hyde Park, Mass.

6bgv 6bjl 6bux 6ccr 6dfe 6ea 6gd 6kd 6oi 6vr 6xi 6zat 7df 7gb 7ny 7pu 7rx 7uj 7zn ea-gp eb-4au eb-4ax eb-4ck eb-4uu eb-4ww ed-7cz ef-8bf ef-8ct ef-8eo ef-8gi ef-8kg ef-8jj ef-8nn ef-8yor eg-2gw eg-5gi eg-5hs eg-5mq eg-5yx eg-6eg eg-2it ei-1ay en-0-ga en-0-ja em-smuk em-2tr sb-1ad sb-1ak sb-1as sb-2ak sb-snni sc-2ar sc-2bl sc-2kd sc-3ag su-1cd su-2ak nj-2px nf-2fg nm-cvy np-4je np-4sa nr-2fg oh-6bdl oz-2ac irb nlv oik pqw sgm spw tve vis wtt wvr znn.

1AID, Mildred S. Lorentson, 23 Braman St., Providence, R. I.
(20 meters)

2nj 4ok 4fa 4cj 4nh 5qj 5wz 5ahf 5ie 5afb 5bh 5ahp 5di 6ary 6nx 6vz 6bih 6tx 6cyx 6bgn 7ek 8brc 8aj 8bag 8dds 8afa 9cwn 9nex 9anz 9aji 9cei 9aok 9xx 9dkl 9dra 9byw 9brh 9bvh 9bjp 9baf 9ce ei-1no nc-3cs sb-1ad sc-3ag sc-2ar sa-fc6.

1BUX-1CMX, Touisset, Mass.
(20-meters)

6am 6anp 6apa 6asv 6azs 6bam 6bau 6bbn 6bgh 6bgv 6bhq 6bhy 6bjf 6bzn 6cmq 6ct 6col 6cyx 6dan 6dch 6ddw 6dgq 6ea 6ec 6im 6kb 6lh 6vz 6zat 7adm 7ny 7bm 7df 7gb 7if 7jf 7mo 7sf nc-3dy nc-4dt nc-4dw nc-4fv nc-5sy ne-8af nj-2px np-4sa sa-fc6 sb-1ac sb-1ad sb-1aw sb-1br sc-3ag su-2ak eb-4aa eb-4ac eb-4au eb-4ax eb-4ck eb-4rs eb-4uu eb-4ww eb-4zz ef-8bf ef-8cl ef-8ct ef-8eo ef-8ft ef-8ix ef-8jm ef-8kv ef-8px ef-8yor xef-8ta eg-2ao eg-2bm eg-2nh eg-2xv eg-2lz eg-5by eg-5ls eg-5yx eg-5yk eg-6yd eg-2it eg-6mu ei-1ay ei-1gw ei-1cr ei-1no em-smtn em-smuk fm-tun2 oh-6bdl oz-2ac fo-a3z fo-a5x.

1BYV, W. W. Smith, 300 Edgell Rd., Framingham Center, Mass.
(17-25 meters)

4dd 4fa 4gs 4io 4jr 4km 4pp 4qb 4rr 4tv 4xe 5agq 5ako 5nqe 5nsz 5bh 5ie 5sh 5wz 6abn 6aft 6am 6ann 6bil 6bvo 6bxr 6ciw 6cls 6cuc 6cyx 6czq 6dch 6dfv 6dgq 6ea 6gj 6hm 6im 6lh 6nw 6nx 6oe 6vr 6vz 6zat 7ao 7ek 7rx 7zn eb-4aa eb-4au eb-4ax eb-4ck eb-4ww ed-7cz ef-8bf ef-8ct ef-8eo ef-8jj ef-8jm ef-8jn ef-8kv ef-8nox ef-8px ef-8udi ef-8yor eg-2ao eg-2nh eg-5by eg-5hs eg-5wq eg-5yk eg-5yx eg-6ko ei-1ay ei-1cr ei-1gw em-smtn em-smuk en-pb7 fm-n2tu gi-2it gi-6mu nd-hik ne-8af nj-2px nm-1aa np-4sa nr-1ur sc-2ah sc-3ag su-1bu su-1cd su-2ak sb-1ak oa-2ah oa-2uk oa-4bd oh-6acg oh-6axw oh-6bdl oz-2ac oz-2ae x-cham x-cr10.

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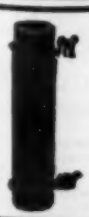

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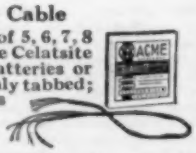

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